YEAR 2000 PRESSURE
Feds prod telcos to prepare networks for banks. **Page 3**

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Skeptics debate latest CA/ Microsoft alliance. **Page 6**

TURNING THE PAGE
Merged book publishers pick Java to unify systems. **Page 69**

COMPUTERWORLD

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Foes closing in on Wintel

States' suit could stall Windows 98

By Kim S. Nash

USERS FACE a possible Windows 98 delay as a dozen states ready an antitrust lawsuit against Microsoft Corp. The suit would likely seek to stop shipment of Windows 98, at least while the legality of bundling the operating system with Microsoft's Internet Explorer browser is debated in court.

This latest turn in an increasingly political battle between

Microsoft files suit, page 112

ANTITRUST DOCKET

- Group of 12 states may sue to stop Microsoft from shipping Windows 98 to PC makers
- While the Justice Department pursues a lawsuit challenging the bundling of Windows 95 and Internet Explorer, it continues to investigate Microsoft's broader business methods.
- FTC considers filing antitrust suit against Intel for forcing the bundling of its products

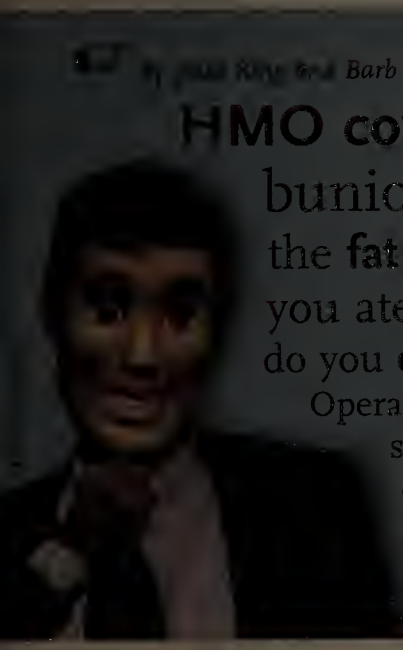
FTC probes Intel's market practices

By Kim Girard and Julia King

ANTITRUST LITIGATION experts said it is very likely that the FTC will file a lawsuit against Intel Corp., especially given last month's preliminary ruling in a separate suit that Intel had abused its monopoly power.

A successful suit could put a crack in the Wintel duopoly of Intel and Microsoft Corp. and open up the market for OEMs and other chip makers. Some

FTC products, page 112



By Julia King and Barb Cole-Gomolski: Will your **HMO cover the tab** for bunion surgery? What's the **fat content** of the **taco** you ate for lunch? How much do you **owe on your credit card?** Operators are standing by to answer those and thousands of other **customer questions** that companies across all industries are increasingly handing

Outsourcing, page 113

Dealer conflict worth the risk for Web sales

By Sharon Machlis

PIONEER ELECTRONICS (USA), Inc. on May 15 will gingerly begin experimenting with something it has never done before: selling its products directly to consumers.

ELECTRONIC COMMERCE

But with close to $900 million per year in sales through a "maxed out" network of 1,200 dealers and 15,000 stores, Pioneer will tread very carefully as it rolls out its first electronic-commerce site on the World Wide Web.

Why risk alienating dealers? "Because our competitors are set up to be able to do this," said Mark Smith, vice president of strategic planning at the Long Beach, Calif., company. And because existing channels "are relatively maxed out," he added. Trying to boost revenue through dealers and retailers brings diminishing returns," Smith said.

Channel conflict can be a tricky issue for manufacturers looking to take advantage of the Web's potential for consumers sales.

To avoid upsetting its current retail network, Pioneer won't sell any of the products already being offered by dealers, such as cassette decks and car stereo systems, Smith said. Instead, Pioneer will bring in products from its Japanese parent company, such as a portable com-

Web sales, page 16

IBM to address host performance gap

By Jaikumar Vijayan

IBM THIS WEEK will announce the birth of its Generation 5 System/390 mainframe line with the goal of restoring IBM to the position of mainframe performance leader.

IBM will use the new machines to battle Unix servers for the right to host electronic commerce, Unix and enterprise resource planning systems, while fending off incursions by mainframe rival Hitachi Data Systems Corp.

Sources briefed on the announcement said the new CMOS mainframes will offer at least 115 MIPS per processor —

Performance boost, page 16

Special Report:

TOMORROW'S DESKTOP

Despite the best efforts of Oracle and Sun, the classic PC will still rule the desktop three years from now, according to a *Computerworld* survey of IS managers. Thin clients, probably Windows terminals, might capture only 20% of corporate desktops. The real battleground will be for the "mobile desktop." Begins on Page 83

John Lester, IS specialist at Massachusetts General Hospital, has outfitted neurology residents with PalmPilots. Now, doctors from other departments want handhelds of their own

NEWSPAPER

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UP FRONT

Simplicity

It was hard to come away unimpressed from last week's CA-World '98 conference in New Orleans. Computer Associates' Unicenter systems management suite has built up a head of steam and appears ready to take its place as a legitimate corporate software platform.

The reason Unicenter is succeeding says a lot about the shifting priorities in corporate computing organizations, namely, a move away from best-of-breed thinking and toward product integration as a key feature.

Integration was CA's mantra at the conference, and it struck a chord with the users I talked with. All have shelves of unused software products they bought for their great features and abandoned because those products didn't talk to anything else.

Integration was the mantra at CA-World '98.

Corporate users are responding to the integration pitch across the board. Witness the surging popularity of enterprise resource planning products such as SAP, Oracle Financials and PeopleSoft. The systems integration business is booming.

Microsoft Office is a corporate standard because it has no-brainer installation and a single point of contact for support. Ditto Windows NT and a host of other add-on products. The emerging corporate technology platforms are the ones that offer the least hassle.

Best-of-breed isn't dead, but it's by no means the most important motivator in IT buying decisions today. That reality will continue to drive the acquisition trend in the software industry and the dominance of vendors that can pull technology together in a single place.

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE

"Remember—I want the bleeding file server surrounded by flaming workstations with the word 'Motherboard' scrolling underneath."

E-Mail Rich Tennant at theswave@tiac.net

Feds urge millennium testing

By Matt Hamblen

FEDERAL REGULATORS will prod voice and data carriers to test if networks shared by the financial community will be year 2000-ready.

Without such tests and more information, banks and brokerages can't be sure they will be able to move billions of dollars in funds on Jan. 1, 2000, federal officials said at a Senate Commerce Committee hearing last week.

The Federal Communications Commission plans to "facilitate end-to-end testing" of private networks used by financial firms and others, said FCC Chairman William Kennard. But some carriers said they believe widespread tests are impractical and too costly.

MOREONLINE

@Computerworld's additional resources on the cost of the year 2000 crisis can be found online at *www.computerworld.com* in the "More year 2000 resources" section under "costs."

DEADLINE LOOMS

Banks and brokerages must be year 2000-compliant by year's end under rules mandated by several federal oversight agencies.

Officials at some institutions are worried that some carriers won't be compliant until well into next year [CW, April 13].

Edward W. Kelley Jr., a Federal Reserve Board governor, said the carriers need to share more information with financial institutions.

"The telecommunications industry, which is obviously vital to ensure the movement of information financial and otherwise around the economy, may be doing all they need to be doing," Kelley said. "But we simply do not know that because they have been very closed with providing us any information."

Kelley told the Senate committee that year 2000 fixes will cause a minor drag on the nation's economy over the next two years (see related story at right).

But Kelley fell short of calling for new rules for telecommunications companies. And Sen. Bob Bennett, R-Utah, who heads up a new Senate committee formed to call attention to year 2000 issues, said it is too early for the government to pass legislation seeking greater compliance.

Others called for more government action.

"What we need is a concerted effort and regulation," said Louis Marcoccio, year 2000 research director at Gartner Group, Inc. in Stamford, Conn. "There's no concerted effort for telecom, and there's no one driving it, and even the FCC has little or no control."

Bankers continue to express concerns.

Spokesmen for BankBoston in Boston and BankAmerica Corp. in San Francisco said they are working closely with carriers but still have concerns about network readiness.

ON TRACK

"I don't know that our comfort level [with carriers] is high, but we're still on track" internally, said Bob Wynne, a BankAmerica spokesman.

Readiness of domestic and international carriers "is a concern of ours," said Steve McManus, a BankBoston spokesman.

AT&T Corp. in New York, the nation's largest long-distance carrier, said it will conduct systems tests through next year.

AT&T assured customers that its networks would be ready for 2000.

Customers with year 2000-compliant systems can perform network tests, a company spokesman said.

Bell Atlantic Corp. President Ivan Seidenburg said even though some banks need to prove they are compliant by year's end, many won't be ready for testing until Bell Atlantic's mid-1999 goal for readiness.

Still, Bell Atlantic's chief year 2000 planner, Skip Patterson, said wide-scale testing with customers isn't pragmatic because there are too many players and too little time and money. Instead, clusters of network devices will be tested. □

Millennium conundrum

▶ *Date-change work poses economic threat*

ALL THE WORK companies are putting into year 2000 fixes is absolutely necessary but largely unproductive for them and the nation's economy, economists said last week.

Year 2000 remediation efforts are expected to shave one-tenth of a percentage point off the nation's gross domestic product this year and next, Edward W. Kelley Jr., a governor of the Federal Reserve System, told the Senate Commerce Committee last week.

"Other than the very valuable ability to maintain its operations in the year 2000, few quantifiable benefits accrue to the firm, and overall productivity gains are reduced by the extra hours devoted to preprogramming and testing," Kelley said.

BIG BILL

Kelley estimated private sector costs in the U.S. to fix the problem will total $50 billion, not including the cost of capital expenditures.

Increased demand for replacement hardware and software has created "spectacular growth recently" for computer industry vendors, he said.

But he warned that today's added growth is "likely borrowed from spending at some time in the future." — *Matt Hamblen and Nancy Dillon*

How to handle the LABOR CRUNCH

Our all-star panel of IT managers and consultants shares techniques and tips on how to attract and keep the best people. A RealAudio roundtable.

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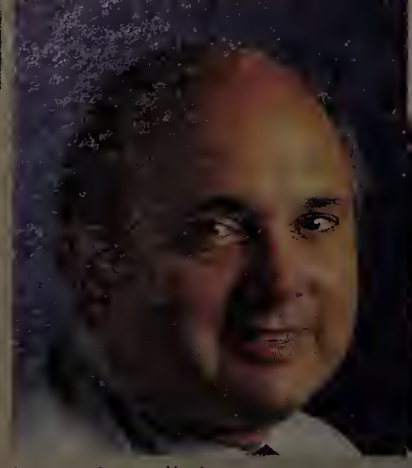
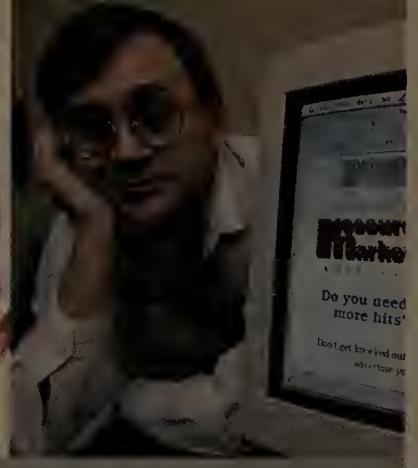


James Connolly has no patience for the XXX-rated E-mail that floods his kid's AOL account. **Op-ed, page 33**

Everyone talks about targeted Web ads, but the immature technology leaves advertisers sticking to basics. **Page 20**



Christopher Swainhart says his Web site's transactions are up 50% since it posted an "audited" seal. **The Internet, page 47**

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ETC.

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The wait continues for Windows NT 5.0

▸ *Beta 2 plans outlined; analysts doubtful*

By Sharon Gaudin

A FEW DAYS after Bill Gates acknowledged Microsoft Corp. was working to fix ongoing scalability and reliability problems with Windows NT 5.0, the company promised to have much of the needed technology available in an upcoming beta release.

In a keynote speech at CA-World '98 last week in New Orleans, Gates, Microsoft's chairman and co-founder, said the company is working to improve NT's ability to handle more processors and to reduce the frequency of system crashes.

Gates' comments stirred up an industry that has been watching for signs that NT 5.0 is moving ahead. The product has been on the drawing board for two years. Six users and analysts said in interviews that they expect Microsoft to issue Beta 2 of NT 5.0 at a conference next month, but the company wouldn't confirm that. A Microsoft spokesman last week said NT 5.0 is due to ship in the second quarter next year, but the company hasn't issued an official release date.

Meanwhile, users and observers said Windows NT's ability to perform reliably and support more than four processors in a server is considered key to businesses adopting the operating system for enterprise applications. And they wondered whether Gates' remarks would add more months to NT 5.0's pending arrival.

"It's frustrating for us. We're hoping for it but not planning on it any time soon," said Dave Lingren, director of advanced development at The Dun & Bradstreet Corp., a New York-based supplier of credit information on companies around the world. "The earlier we had this kind of technology in a beta, the better off we'd be. We need to experiment with it and see what we could do with it."

Lingren said he had been looking for features such as an active directory — which supplies one location to map out all the applications and services in the system — and new multiprocessor support in the first beta, which came out last fall. He was disappointed not to get it then.

But Ed Muth, Microsoft's group product manager for Windows NT, said the wait is almost over for Lingren and other corporate users like him.

EXPECTATIONS

Muth said new scalability and function features will be on display in Beta 2. He wouldn't specify the release date for Beta 2. But he said users can expect to see the following:

- Support for the next generation of microprocessors based on both Intel Corp.'s Merced and Digital Equipment Corp.'s Alpha technology.
- Enterprise Memory Architecture, which boosts a server's memory capacity.
- Improved network communication services.
- An active directory.

> **"The earlier we had this kind of technology in a beta, the better off we'd be. We need to experiment with it and see what we could do with it."**
> **– Dave Lingren, Dun & Bradstreet**

- Zero Administration Windows technology to remotely manage Windows systems.
- Kerberos to authenticate users on the network.

Bob Sakakeeny, an analyst at Aberdeen Group, Inc., said corporate users shouldn't hold their breath for an enterprise class version of Windows NT.

"I don't think we're going to see this stuff in 5.0," Sakakeeny said. "The other operating systems out there [such as Unix and Novell, Inc.'s NetWare] are decades old and got stable and big over time. NT will need three-plus years to handle business-critical operations." □

Senior editor Laura DiDio contributed to this report.

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Managing expectations

▸ *Observers: CA and Tivoli build hype through partnerships*

By Patrick Dryden
NEW ORLEANS

NEWS ANALYSIS

USERS SHOULDN'T pin their hopes on so-called strategic partnerships in the management software marketplace. Little more than mere sound and fury, the deals often signify nothing.

At least that is what analysts said last week as rivals Computer Associates International, Inc. and Tivoli Systems, Inc. jockeyed for leadership position in dueling bundling deals with Microsoft Corp. (See related story, page 14.)

Those deals are just ways for Microsoft to create hype for far-off Windows NT 5.0 and for other vendors to do the same for their management tools, said Ray Paquet, an analyst at Gartner Group, Inc. in Stamford, Conn. Besides, there is nothing strategic about Microsoft taking a neutral position and giving away everybody's unintelligent agent software, Paquet said.

"We explain partnerships in this market like Liz Taylor marriages: They happen frequently, get a lot of attention and don't last long," Paquet said.

CA and Microsoft announced plans here to ship a portion of the Unicenter TNG Framework, a subset of CA's full management suite, with Windows NT 5.0 servers. CA also pitched key PC vendors as framework partners, although they said they would install CA agents and tools only if customers asked.

That brought swift spin control from Tivoli. Paquet called its reaction "paranoid." Tivoli reacted fearfully because CA is gaining converts in larger accounts, winning the broad marketing war, other analysts said.

For example, in less than a year since announcing Unicenter TNG Framework partnerships with a dozen system and application vendors, CA officials said, the company has distributed 3.6 million free copies of the trial tool kit.

"That's like getting a shampoo sample with the Sunday paper," said Paul Mason, an analyst at International Data Corp. in Framingham, Mass.

Even though system vendors announced at last year's CA-World show their intention to ship the framework with servers, CA didn't start supplying Unix versions until about two months ago, said Chip Glied-

CA and Tivoli, page 14

THE UNIX VS. NT DEBATES

	Advantages	Disadvantages
Unix	• Scalability • Reliability • Superior performance	• Expensive hardware • Hard to learn • Runs typically on proprietary boxes
Windows NT	• Lower entry-level costs • Runs on hardware from multiple vendors • Ideal for managing desktops	• Doesn't scale as much as Unix • Untested in enterprise environments • Costs almost as much as Unix to run large applications

Move from Unix to NT may have hidden costs

By Jaikumar Vijayan and Laura DiDio

UNIX-BASED shops that think they will save money with a move to Windows NT are getting a rude awakening.

Although NT systems may have a lower entry price compared with Unix servers, much of that gap has narrowed by the time users have finished configuring enough processors, memory and storage to get Unix-like performance from their NT systems. In fact, when combined with administrative and maintenance costs, NT systems may end up costing more to own than Unix systems, users and analysts said.

"There is a misperception that just because NT is a shrink-wrapped product, it is somehow cheaper" than Unix, said Tom Yager, a network operating system team lead at Sprint Paranet Regional Operating Co. in Dallas.

Greyhound Lines, Inc., also in Dallas, recently analyzed the cost/performance ratio between the two operating environments and discovered it costs about $900,000 to set up a 2,000-user Windows NT environment compared with $1 million for a Unix setup. "But the initial capital expenditure doesn't begin to tell the whole story," said Phil Easter, a technology strategist at Greyhound.

For ongoing maintenance, support and losses associated with network downtime, Unix is almost "30% cheaper" than NT, Easter said. NT support costs worked out to about $750,000 annually compared with only $540,000 for Unix. And where-as an NT setup needed 10 network managers, a Unix environment needed just six, he said.

As part of a massive enterprise resource planning rollout, Howmedica, Inc., a subsidiary of Pfizer, Inc. in Rutherford, N.J., evaluated its Windows NT systems last year before it decided to go with Unix systems from Sun Microsystems, Inc. The decision was made largely because Unix systems were more scalable, said Stuart Davie, Howmedica's vice president of information technology.

"Early indications were that NT would be a lot cheaper . . . but in the end, the difference wasn't significant" in terms of overall cost, Davie said.

Much of the hardware cost comes from constantly having to add more processors or throw more servers to handle application scalability issues, Yager said. For example, the company he worked at before joining Sprint tried to host an intranet application for about 1,500 users on a dual-processor, 300-MHz Pentium server. Less than a month later, the company had to substitute a four-processor system with almost four times the memory and with features such as Ultra SCSI drives to handle the workload, Yager said.

Another significant cost in some environments is the need to have redundant Windows NT systems backing each other up to ensure high-application availability, said a systems analyst at a utility company in Washington, who requested anonymity. Unix systems don't crash as often, so fewer backup systems are needed, he said. □

Novell adds clustering to NetWare

By Laura DiDio

NOVELL, INC. will take a step toward delivering more reliable and easier-to-use networks this week when it introduces enterprise management additions to NetWare at Networld/Interop '98.

STEVE BORNS

NetWare product marketing manager Michael Simpson said the company will outline delivery plans for advanced TCP/IP management and its Orion 16-way high-availability clustering, which is built to run on Intel Corp.-based hardware.

Clustering technology provides businesses with automatic recovery from server and application failures and lets administrators perform standard maintenance and upgrades without taking the server down. Four users said the new technologies could halve their administrative chores.

"This is all great stuff," said Robert Abate, chief information officer at GTN Technologies LLC in Lawrenceville, N.J. "We're building bigger, more complex intranets and expanding our Internet usage. Orion will give us much better network reliability. Native TCP/IP does away with Novell's IPX protocol, which was proprietary, cumbersome and caused network outages," he said.

Orion's support for 16-way clustering puts Novell well ahead of the recently released Microsoft Cluster Server (MCS) from Microsoft Corp. MCS supports only two-way failover clustering in the initial release, and on a par with many Unix servers.

"We're building more complex intranets and expanding our Internet usage. Orion will give us much better network reliability."
– Robert Abate, GTN Technologies

Also, Novell will propose to both the Internet Engineering Task Force and the Desktop Management Task Force extensions to the Dynamic Host Control Protocol (DHCP) for Novell Directory Services (NDS)-enabled TCP/IP management.

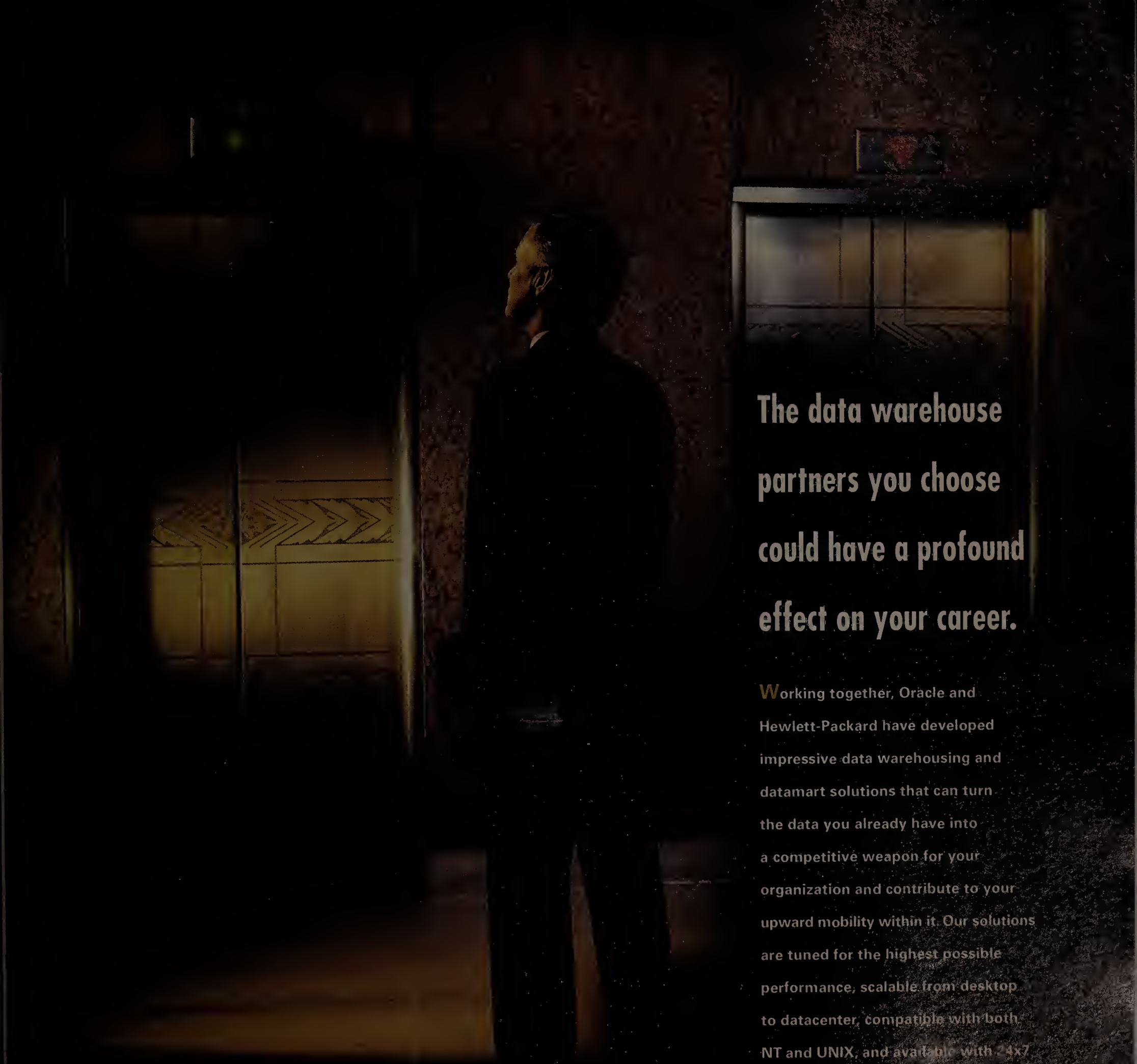
The DHCP protocol currently gives users a way to dynamically assign TCP/IP addresses on an as-needed basis, similar to the way that rental car agencies lease cars.

Novell's proposed extensions to DHCP would take TCP/IP management a giant step further. It would cut administration time by obviating the need for managers to maintain and manage separate databases for user IDs and TCP/IP addresses, users said. The icing on the cake is that Novell will bundle DHCP into NetWare 5.0's NDS, free.

"Novell is starting to catch on to the concept of no charge for value-added facilities like DHCP integrated into NDS. They need to keep doing it, and give us more freebies," said Phil Easter, technology strategist at Greyhound Lines, Inc. in Dallas. "DHCP will halve my management time."

Competitively, the announcements will put Novell ahead of rivals such as Microsoft in DHCP management initiatives, analysts said.

"Other vendors are working on similar technology initiatives with regard to DHCP, but Novell is the only company that actually has a directory — NDS — that can implement the technology," said Mary Petrosky, an analyst at The Burton Group, Inc. in San Mateo, Calif. □



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Java show quiet on Microsoft front

▸ *Visual J++ users cite need for Windows ties*

By Carol Sliwa
Los Angeles

MICROSOFT CORP. long has claimed that cross-platform Java is a myth and developers really want to write Java applications that take advantage of the underlying operating system.

But the Redmond, Wash., software maker was hardly packing 'em in last week. About 225 developers showed up for the first-ever show to promote Microsoft's Java vision and the Visual J++ tool that, to the dismay of Java purists, can help programmers write Java applications optimized for the Windows operating system.

QUIET ZONE

The quiet user sessions and morgue-like exhibition floor at the Visual J++ Developer Conference were a far cry from the buzz created by 14,000 developers swarming around San Francisco's Moscone Center for Sun Microsystems, Inc.'s JavaOne show in March.

"The developers who *were* there were completely dedicated," said Prashant Sridharan, the Visual J++ product manager.

Conference attendees spelled out a variety of practical reasons for using the Microsoft tool. Some had end users in Windows-only environments. For others, Visual J++ is part of a familiar family of tools. Others simply needed to take advantage of its many shortcuts to write applications quickly.

At BRC Healthcare, Inc. in Austin, Texas, developers see the Visual J++ 6.0 beta as the only tool that can debug and compile code needed to run a complex touch-screen application. The team has written an application that lets emergency room doctors and nurses in more than 50 hospitals track patients' vital statistics. The front end has been Java-based for two years, and the server piece is being rewritten in Java.

Chris Berry, lead systems architect at BRC Healthcare, said Microsoft's tool gives him an integrated development environment for Java. "I don't care anything about the write once, run anywhere stuff. What matters to me is that Java is a better language to develop in," he said.

VISUAL J++'S ALTERNATIVES TO JAVA

Java portion	Microsoft alternative
Java Foundation Classes	Windows Foundation Classes, with a visual designer that lets developers drag-and-drop code
JavaBeans	Import JavaBean as ActiveX control
Enterprise JavaBeans	Windows NT Server and BackOffice services accessible through Component Object Model
Java Native Interface	Raw Native Interface; J/Direct
Signed Java Archive files	Zip files; signed cabinet files

Sanjay Vasandani, a senior manager at Sabre Technology Solutions, a division of AMR Corp. in Fort Worth, Texas, said working with Microsoft's development tools "is a question of meeting end-user business goals. Ultimately, that's what I care about."

Vasandani, who is working on a graphical front end for travel agents to book seats, said he would like to write cross-platform Java. But he said he recognizes that performance considerations may drive him to use Microsoft's Windows Foundation Classes — prebuilt code that developers can use to build Java applications for Windows — even though he is aware that "the [Foundation Classes], if it becomes popular, is certainly the end to cross-platform Java."

QUICK WORK

Others said they felt the ease-of-use lure of Microsoft-flavored Java.

"It's just so easy to use in some respects that you have to go with it when you want to get a job done fast," said Timothy Ayodele, a programmer/analyst at the California Department of Aging in Sacramento.

Ayodele said his personal preference may be Unix and Pure Java, but users wanted Microsoft. Microsoft clients led to Microsoft servers and, finally, to Microsoft tools, he said. □

Corrections

An April 20 "alt.cw" story on Virtuosa jukebox software misstated the amount of hard-drive storage required for 15 hours of music. It is 1G byte, not 1M byte.

Also in the April 20 issue, the story "Digital linear tape format due in 1999" erroneously attributed Super DLT to Seagate Technology, Inc. It is a Quantum Corp. product. The story also said Quantum and the HP/IBM/Seagate partnership are working on one format. Actually, they are working on different formats that will be incompatible, although both formats will be made out of linear tape.

Sybase to spell out comeback steps

▸ *Emphasis on Internet, third-party tools*

By Randy Weston

FLASH BACK TO April 1997: Sybase, Inc. announces as its grand plan for renewed success that it will stitch together its databases, development tools and middleware and enrich them with ActiveX and Java technology.

Flash forward to today: Sybase still is rolling out pieces of that strategy, sales still slide and financial woes continue.

"It's going slow, no doubt about it," said Terence Light, manager of systems development at United Grain Growers Ltd. in Winnipeg, Manitoba. "You keep waiting to hear things are good, you see a few signs of improvement, then something happens. You still get a sense that they keep saying to themselves, 'What are we doing and what should we be?' They need to get over that."

SYBASE USER CONFERENCE

Sybase will lay out its latest strategy for users today at the International Sybase User Group conference in Washington. That strategy will include a plan to bundle its database and data warehousing tools with third-party tools to create an all-in-one data warehousing package.

Sybase also is focusing its efforts on Internet computing and mobile computing and has rejuvenated its sales effort with a team dedicated to digging up new customers.

However, the clock is ticking for the Emeryville, Calif., vendor. Sybase posted a $79 million loss in 1996 and had four straight quarters of declining revenue last year. First-quarter results this year weren't much better: The net loss, including a $51.6 million restructuring charge, was $81.2 million.

Brian Murphy, an analyst at The Yankee Group in Boston, said Sybase's strategy won't be enough unless the company makes bigger moves to embrace Microsoft Corp.'s Windows NT. Sybase also should partner with enterprise resource planning (ERP) vendors, because database decisions are taking a back seat to ERP buys such as SAP AG, he said.

SPREAD THE WORD

Sybase needs to get the word out about its product line, which in many ways is superior to the competitors that are beating it, Murphy said.

"The important thing to customers is the long-term viability of the product itself," Murphy said. "Regardless of the outcome here, Sybase should not be in a position to apologize about [its] product. [It is] in a position to give customers products that are every bit as functional and scalable as Oracle [Corp.] and more so than Microsoft. And that is the most important thing."

Brent Sanderson, information technology manager for the State of Utah finance division, agreed. He said Sybase needs to give its current programs more time to take root.

"I was watching a PBS show about World War II and how many hours it takes to turn a battleship around," Sanderson said. "It takes time to change the direction of a company that size. They haven't had time yet to fully implement their plan."

"The biggest thing [Sybase officials] need to show is they haven't lost hope in themselves," he said. "The worst thing they could do is say, 'A year ago, we did this. It didn't pay off, so now we are going to change our strategy.' If they come in and say they are going to make wholesale changes, then I'll be disappointed with them."

Sanderson and Light agreed Sybase seems to be heading in the right direction and said they are willing to give Sybase more time.

"As Sybase is sorting all this out, its marketing is a little weak," Sanderson said. "We have Oracle coming in and doing a lot of marketing to our top management." □

Sybase recovery initiatives

April 1997
Announces plans to meld databases, development tools and middleware and infuse them with Java and ActiveX technology.

July 1997
John Chen (right) named COO and president. CEO Mitchell Kertzman becomes chairman.

January 1998
Forms sales team for new business and begins targeting three markets: Internet, data warehousing and mobile computing.

February 1998
- Buys Boston-based Intellidex Systems, Inc for data management and warehousing tools.
- Spends $70M in restructuring to save $100M this year.
- Lays off 600 people.
- Chen promoted to co-CEO with Kertzman.

May 1998
Announces plans to bundle data warehousing tools.

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– Dataquest, 1997

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– Dataquest, 1997

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Users want E-mail networks to do E-commerce

By Barb Cole-Gomolski
ANAHEIM, CALIF.

MESSAGING MANAGERS are looking to turn their E-mail networks into channels for electronic commerce, but there are several obstacles standing in their way, said users gathered here last week at the Electronic Messaging Association (EMA) '98 conference.

Most companies today interact with customers and trading partners via E-mail. But the goal of many sites is to use E-mail to transmit sensitive business documents and drive World Wide Web-based applications. That will let companies streamline their own operations and reach a broader customer base.

WHAT'S HOLDING THEM BACK?

Some of the roadblocks to using E-mail for secure electronic commerce:

Issue	Resolution
▸ Proprietary E-mail system	▸ Move to mail systems with IP hooks
▸ Lack of encryption in E-mail	▸ Widespread deployment of S/MIME
▸ Can't connect to directories outside the company	▸ Widespread deployment of LDAP

Before they participate in electronic commerce, users at the EMA conference said they first need to beef up their E-mail systems' security and put directories in place that will let them link with other companies, customers and suppliers.

"The problem is that nobody is starting with a clean slate," said Kerry Stackpole, president of the Arlington, Va.-based EMA. "We're still trying to get an infrastructure in place to support electronic commerce," he said.

Indeed, most companies have a handful of legacy E-mail systems and multiple directories in place. Old infrastructure and disparate systems make it harder to integrate E-mail with electronic commerce, said Jason Erickson, an associate consultant at Quality Consulting Services, Inc. in McLean, Va.

SECURITY A CONCERN

Users are looking to the Secure Multipurpose Internet Extensions (S/MIME) E-mail security specification to help shore up security on their messaging systems. S/MIME defines how encryption and digital certificates can be added to E-mail, which prevents forgery and interception of messages.

But S/MIME support among the major E-mail packages is still spotty. "S/MIME is just in the early adopter phase," said Dan Blum, principal at Rapport Communication in Washington.

And few companies have the hardware and software in place to manage the digital certificates used to verify the identity of senders and recipients, Blum said.

USF&G Corp., a Baltimore insurance company, learned about the challenges of E-mail-based electronic commerce when it tried to transmit documents and share databases with its agents and outside lawyers via E-mail.

The lack of a standard E-mail and directory platform between the company and its agents made that difficult.

Those who use online services can't easily access USF&G's directory or document databases, which are based on Notes. USF&G considered requiring agents to use Notes but scrapped the plan after it realized it would probably be responsible for maintaining agents' Notes address books and databases. □

MOREONLINE

@Computerworld's links to articles and other resources related to electronic messaging and electronic commerce can be found at: *www.computerworld/links* under "E-mail and electronic commerce."

Lotus, Microsoft target legacy mail

Lotus Development Corp. and Microsoft Corp. last week announced initiatives to draw users of legacy E-mail systems to their client/server platforms.

At the Electronic Messaging Association conference here, Lotus unveiled software migration kits for users of OfficeVision from IBM in Armonk, N.Y.; Memo from Verimation, Inc. in Woodcliff Lake, N.J.; Tao from Fischer International Systems Corp. in Naples, Fla.; and All-in-1 from Digital Equipment Corp. in Maynard, Mass.

The migration kits will let users of those legacy E-mail systems share messages and directory information with Notes users.

Lotus also announced consulting services for companies moving to Notes. Charlie Janssen, a business analyst at Colorado Springs Utilities, said that could help companies like his that are migrating to Notes but having trouble finding Notes talent.

Separately, Microsoft last week acquired The Mesa Group, Inc. in Newton, Mass., that makes tools for moving messages and applications from Lotus CC:Mail and Notes to Exchange.

Not to be left out of the race to entice the 14 million users of CC:Mail, Novell, Inc. last week said it is cutting the price of its GroupWise mail and groupware system by 60% in an attempt to win migration business.

While the messaging heavyweights focused on wooing new customers off old E-mail systems, Netscape Communications Corp., based in Mountain View, Calif., previewed a new messaging server, code-named Troopers ISP.

The server is aimed at Internet service providers and large companies. It is due in the second half of this year. — Barb Cole-Gomolski

Time's Up for T1 Multiplexers, Says Nortel's Conner.

The T1 multiplexer's era in the private network has passed. When time division multiplexing was created, voice traffic was the biggest concern to enterprises. A network's reliability and performance now hinge on its ability to handle ever-increasing data traffic. In recent years, data has replaced voice as the primary communications carried on enterprise networks. Year 2000 performance issues in T1 multiplexers are likely to be addressed through the expense of implementing Y2K patches.

"Time's up for T1 multiplexers," said F. William Conner, president of Nortel Enterprise Data Networks. "Enterprises that go for a Y2K patch are throwing good money after bad. Networks must be able to transition companies beyond the Year 2000 and meet performance, speed and reliability demands."

Nortel Enterprise Data Networks is transitioning many customers to Passport, a multimedia switch that meets the most stringent reliability requirements in the industry. Bandwidth and equipment cost savings of up to 50 percent, compared to TDM, enable an enterprise to pay for the technology in just a few years.

Nortel has developed a simple multiplexer replacement package featuring the Passport Enterprise Network Switch. Not only is it a complete long-term solution, the network will be transformed into a state-of-the-art system that will adapt to future needs with a true integration of voice and data.

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FRANKLY SPEAKING

The numbers game

FRANK HAYES

POOR JUDGMENT. That's what one reader named John called my suggestion to dump the traditional ways we measure IS performance.

A few weeks ago, I said we should quit collecting techno-trivia — counting lines of code, capacity utilization and problems cleared by the help desk.

Instead, I said, let's measure business results, especially since what you measure is what you'll get.

Lots of you liked that idea. The consensus of my mail was that business should always be the focus of the systems we run.

But John, who works at a large consultancy, disagreed. He wrote: "Every activity or process needs to be measured so it can be improved. Metrics is the voice of those processes.

"If one is a programmer, the appropriate measurements are lines of code, function points, effort hours, duration, defects (bugs). If one is a [database administrator], database performance specs are a measure of the success (or failure) of tuning practices. . . . Only through measurement of IS processes can meaningful improvement be made," he insisted.

True enough — as far as it goes. What you don't measure, you can't improve, and there's no doubt we need constant improvement in our IS processes. The hard part is measuring things because they matter, not just because they're easy to count.

Simple counts are too easy to manipulate into meaninglessness.

Then there's Nanette, a former human resources staffer who's now in IS. Metrics "should also be easy to understand for the non-IS person," she wrote. "When someone says our profit margin or our personnel turnover is such and such, everyone knows what that means. If an IS person says a system has 4,300 function points, non-IS people don't really grasp that."

And even if they understand what lines of code and function points are, they probably don't see how they tie to real business results. Simple counts are too easy to manipulate into meaninglessness.

Say you simply count the number of wastebaskets your janitor empties. He can double his "productivity" by giving everyone in the office two wastebaskets. Lines-of-code counts have that same slippery aspect that's not well-connected to business benefits.

MAKING SENSE

But many traditional IS metrics *can* be cranked around to a stronger business focus — measures that make sense to non-IS people *and* help us improve what we do. For example, we like to count bugs, but what really matters to users is that the software does what it's supposed to. That means measuring not just defects, but also effective design and business function. Count how many business capabilities on users' wish lists didn't make it successfully into the code, and you have a better measure of where you fell short.

We like to measure a project's duration, but what matters is that it's delivered in time to be useful. Early delivery of an ugly, barely functional first cut may delay the elegant final version, but if users are making money with it, maybe it's worth the slippage. Measure how well you hit the schedule users need — not just what's most efficient for IS.

We like to clock personnel-hours, and that's a metric non-IS people grasp. But it's not enough. How much of that cost was training? How much was analysis and design time? How much was implementation? How much was — or should have been — replaced by off-the-shelf products that cut the labor cost?

Maybe business-oriented IS metrics aren't so far from what we've been using all along.

But we must keep them focused on business benefits and use good judgment in deciding on metrics that matter. □

Hayes is Computerworld's staff columnist. His Internet address is frank_hayes@cw.com.

SHORTS

Wang sues Netscape, AOL

Wang Laboratories, Inc. is demanding a 1.9% royalty payment from sales of all Netscape Communications Corp. client software in a patent infringement lawsuit that also names America Online, Inc. Wang, in Billerica, Mass., claims its patent for a video/text system covers bookmarks and other methods of saving World Wide Web pages. The lawsuit was filed Oct. 14 in Virginia, but news of the court action emerged just last week when Netscape reported details on its Mozilla Web site. Netscape and AOL said Wang's patent is invalid.

Internet copyrights advance

A key U.S. Senate committee approved new copyright rules late last week that would extend strong copyright protections to material available on the Internet. Microsoft Corp., writers, musicians and other publishers support the provisions, which were proposed in a treaty at a December 1996 meeting of the World Intellectual Property Organization. A full Senate vote is expected this year.

Borland renamed Inprise

Hoping to ditch its reputation as a troubled, PC-focused company, Borland International, Inc. last week changed its name to Inprise Corp. and unveiled new product directions. The Scotts Valley, Calif., company will combine its development tools with the middleware it acquired when it bought Visigenic Software, Inc. in San Mateo, Calif., in February. Inprise will build applications that can give staff and customers access to corporate databases. Inprise will continue to use the Borland name for its popular line of application-development tools.

United, Delta joint effort

After earlier talks had stalled, UAL Corp.'s United Airlines, Inc. and Delta Air Lines announced a marketing alliance that will let travelers book all their reservations through one carrier. The pact still needs approval from Delta's pilots union. It calls for United and Delta to sell seats on each other's domestic fights and to link their respective frequent-flier programs. American Airlines and US Airways announced a similar plan two weeks ago.

Companies hoard talent

A Coopers & Lybrand LLP survey of 441 companies found that 12% have started "overhiring" information technology staffers so they will be on hand for future projects. The reason: companies that are expecting major business growth don't want to get caught with too few IT staffers to support new projects. Already, 14% of the survey respondents have cut back expansion plans because of too few IT resources.

Lycos buys directory technology

World Wide Web search engine maker Lycos, Inc. is moving to build an Internet directory. Lycos, in Waltham, Mass., announced a $39.75 million acquisition of WiseWire Corp. in Pittsburgh, which has automated technology for creating Web directories. Market leader Yahoo, Inc. has captured the top spot among search sites for its highly lauded directory that organizes Web sites by category.

GE wins rail deal

General Electric Information Services (GEIS) in Rockville, Md., will take over data center operations and managed network services for the Association of American Railroads. Terms of the deal weren't disclosed. GEIS will support an electronic-commerce system that handles more than 4 million transactions per day — such as settlements, ship notices, rates and equipment traces — between 500-member railroad companies. GEIS also will develop a standard way to exchange business documents in real time for the U.S. rail industry.

Chevron links suppliers via Web

Chevron Corp. plans to develop a World Wide Web-based procurement system to handle pieces of its multibillion-dollar global purchasing activities. The San Francisco-based petroleum producer said it is tying packaged Internet purchasing software to the SAP AG and J. D. Edwards & Co. application suites used by different parts of the far-flung company. A pilot installation is being launched now with 18 companies that supply products or services to Chevron. A full implementation is expected later this year.

SHORT TAKES **Oracle Corp.**, in Redwood Shores, Calif., has shipped Release 11 of its application suite, which adds new front-office applications and runs on browser-based thin clients. . . . Troubled database vendor **Informix Corp.** announced a profit of $4.88 million for the first quarter, compared with a loss of $144.2 million for the same quarter last year. Revenue was up 12%. . . . **MCI Communications Corp.** posted first-quarter revenue of $5.3 billion, up 8.3% from the same period a year ago. Net income fell to $101 million, a 66% drop from a year ago. . . . **IBM Corp.** rolled out new notebooks equipped with **Intel Corp.'s** Mobile Pentium II processor, including the ThinkPad 600, an ultraportable business model. The ThinkPad 600 costs $2,799.

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Management-ready PCs on the way

By Patrick Dryden
NEW ORLEANS

MICROSOFT CORP. and a handful of management-software vendors last week announced plans to make Windows NT 5.0 systems well-behaved members of enterprise networks.

When NT 5.0 ships, it will include agents and tools that will let information systems managers monitor performance statistics through the emerging Web-based Enterprise Management (WBEM) infrastructure (see chart).

But IS managers and analysts had mixed views on the real benefits to come from such bundling announcements.

"This saves one headache we have to go through when we bring hardware and operating systems up to speed," said Dave DeMarco, a technical associate at Eastman Kodak Co. in Rochester, N.Y.

First-time setup will be easier when the agent for TME 10 enterprise management tools from Tivoli Systems, Inc. is part of the Windows NT installation, DeMarco said. "But we could wind up with two agents when we upgrade a system, then have to disable the old one," he said.

Bundling benefits may be minor because each workstation requires individual configuration, said Donny Lippard, an assistant IS vice president at Allstate Insurance Co. in Northbrook, Ill.

As Allstate rolls out Unicenter TNG from Computer Associates International, Inc., installers must specify the domain where the agent reports and the functions to turn on, Lippard said, "because those vary for stations on a campus or in one of our 14,000 offices."

Agents alone can offer no value until users have the corresponding manager in place, the manager recognizes WBEM, and vendors ship WBEM objects to manage, said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo.

More than 75 vendors have announced plans to support the WBEM standard. It uses a common information model to relate data about networks, systems and applications in order to pinpoint problem causes and monitor service.

"The real advance here is the ability to get meaningful information without being overwhelmed," Microsoft Chairman Bill Gates said last week at CA-World '98 here.

Windows 98 workstations also will use WBEM in an effort to respond to manageability complaints, said Rob Wight, general manager for Windows management infrastructure at Microsoft.

Tivoli will announce WBEM enhancements to TME 10 at the company's annual user conference in two weeks, officials said.

CA officials also said that Unicenter TNG and stand-alone management tools introduced last week soon will be able to manage WBEM objects and that bundling agents with Windows NT 5.0 is just "a matter of timing." □

YOU WANT MANAGEMENT WITH THAT?

Windows NT 5.0 server and workstation versions so far will ship with Web-based Enterprise Management (WBEM) agents for these management tools:

- Compuware's EcoTools
- Hewlett-Packard's ManageX
- NetIQ's AppManager Suite
- Tivoli Systems' TME 10

Windows NT 5.0 server versions will ship with the following application for viewing WBEM information:

- Computer Associates' Real World Interface

CA and Tivoli partnerships

CONTINUED FROM PAGE 6

man, an analyst at Giga Information Group, Inc. in Cambridge, Mass.

That hyped rollout frustrated some users in all-Unix shops, according to Gliedman and CA employees who demonstrated the new HP-UX and Solaris framework versions at CA-World 98 last week.

Those users refused to adopt a Windows NT server simply for the fancy graphical management interface provided in the initial framework.

Two years ago at CA-World '96, Microsoft Chairman Bill Gates delivered another keynote address promising tighter management of the Windows world through a partnership with CA.

The deal promised that users could launch Microsoft's Systems Management Server from the Unicenter TNG console and pass parameters.

"We didn't get a lot of customer demand for it," said Marc Sokol, CA's senior vice president of advanced technology. "But it's a very different world now; Unicenter is accepted as a platform." That's true, as evidenced by the tripling this year in vendors that demonstrated products that integrate with Unicenter TNG, said Herb VanHook an analyst at Meta Group, Inc. in Westport, Conn.

But all those new partners may not matter to most Unicenter users because they prefer to get as much software and support as possible directly from CA, VanHook said.

The real benefit from partnership announcements is the promise of communication, said Dave DeMarco, a technical associate at Eastman Kodak Co. in Rochester, N.Y.

"We have more confidence they are working together so we can eventually manage these machines," DeMarco said. □

Microsoft's Bill Gates and CA's Charles Wang partnered to provide a tool that displays helpful information about Windows versions that haven't shipped yet

CA spills beans about next rev of Unicenter enterprise software

By Patrick Dryden
NEW ORLEANS

IN AN UNCHARACTERISTIC move, Computer Associates International, Inc. revealed the next major release of its enterprise management software, during the CA-World '98 conference here last week.

The forthcoming version, called Unicenter — The Next Dimension (TND), turns the central console into a time machine: Information systems managers can replay historical events and foresee future conditions. For example, the software will have a VCR-like control panel for reviewing past events on a client/server network and a neural network analyzer for predicting problems

Sabre Group's Kirk Farmer: Unicenter TND "sounds good if CA can deliver it"

But users will have plenty of time to wait. Unicenter TND probably won't begin beta testing until next summer and won't ship until the end of 1999. The candid preview is welcome, but it may backfire, analysts and users said.

"What they propose is fantastic, but they may be setting expectations too high," said Herb VanHook, an analyst at Meta Group, Inc. in Stamford, Conn.

Unicenter TND "sounds good, if CA can deliver it," said Kirk Farmer, vice president of operations planning for desktop and distributed computing services at Sabre Group in Fort Worth, Texas. "There's not much you can get your hands on now," he added.

CA released Version 2.2 of Unicenter TNG last week with support for some aspects of the future incarnation. With Version 2.2, optional neural network agents analyze performance patterns in servers, for example, to predict such problems as a memory leak, CPU overuse or a full disk.

But the wait for Unicenter TND may be frustrating because it promises to help IS departments cope with the increasingly complex interactions of client/server networks and business demands for service-level guarantees, users and analysts said. Unicenter TND's control panel will let operators record and play back activity monitored by Unicenter.

That could be useful during training and troubleshooting, for example, or enable IS planners to stress-test their systems and network connections by using stored application traffic.

"This could help us plan capacity, maintain reliability and avoid problems we run into over and over again," said Orlando Carter, chief of software support at the Internal Revenue Service in Detroit. He is evaluating enterprise management software from CA and Tivoli Systems, Inc.

When CA adds the neural network analysis engine to the core of Unicenter, all management tools will be able to learn performance patterns to predict events. Then a new blue icon will appear on the console to warn of potential problems. □

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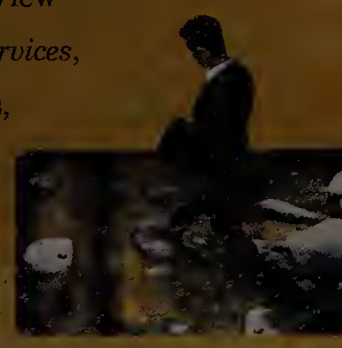

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Sun midrange server revamp adds more high-end features

By Jaikumar Vijayan

IN A COMPLETE overhaul of its midrange lineup, Sun Microsystems, Inc. last week introduced a range of servers that feature capabilities migrated from the high end.

The servers, which range in capacity from dual-processor systems to a 30-way symmetrical multiprocessing server, are based on the Mountain View, Calif., company's 336-MHz UltraSPARC chip.

The servers support performance-enhancing capabilities, such as "dynamic reconfiguration," which lets users take advantage of unused system capacity.

In the past, such features were available only on Sun's mainframe-class E10000 systems. Such capabilities let users mount and manage multiple large applications on a single server.

The servers give users increased scalability and performance to run applications such as data warehouses and enterprise resource planning (ERP) applications on midrange Unix servers, said Stuart Davie, vice president of information technology at Howmedica, Inc., a medical technology group of Pfizer, Inc. in Rutherford, N.J.

BIG BENEFITS

Howmedica is in the midst of a worldwide rollout of SAP AG's R/3 and has already implemented a procurement module on Sun's existing Server 6000 system. "We are looking for higher capacity and greater transaction processing capabilities" for implementing the manufacturing, sales and distribution modules this year, Davie said.

The systems will boost Sun's bid to expand its presence in the market for ERP applications, said Harvey Hindin, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.H.

Sun also announced several ERP-related services wrapped around its latest hardware offerings. They include services for planning, sizing and implementing ERP on the new Sun platforms and new service centers for testing and benchmarking ERP applications.

"[Sun is] trying to set the pace and be the dominant player in the ERP space," Hindin said.

Sun's Server-3500, -4500, -5500 and -6500 models are available immediately. Pricing ranges from $49,700 to more than $1 million. □

BUYING PATTERNS

A sample of consumer goods people are likely to buy on the Web:

Product	Likely to purchase	Unlikely to purchase
Software	77%	9%
Books	67%	10%
CDs	64%	11%
Electronics	45%	23%
Financial services	21%	53%
Food/drinks	16%	55%
Insurance	14%	60%

Base: 500 Internet users

Source: Cybershoppers Research Report survey, conducted by Greenfield Online, Inc. *(www.greenfieldcentral.com)* for the Better Business Bureau

Performance boost

CONTINUED FROM PAGE 1

approximately twice the 60 MIPS per processor offered in today's fourth-generation S/390s. In a 10-processor system, the G5 is expected to surpass 900 MIPS.

This is the first time since IBM moved to CMOS processors almost five years ago that it is offering a system more powerful than its last bipolar, water-cooled mainframe system.

The G5 almost closes the performance gap between the S/390 and Hitachi's Skyline CMOS mainframes — which today boast a rating of 150 MIPS per processor — and gives IBM a chance to stem new-account penetration by Hitachi, according to a recent report by Morgan Stanley & Co. in New York. And like the Skyline mainframes, IBM's new machines should appeal to large data centers looking to boost processing power while conserving energy and floor space.

S/390'S IMPORTANCE

Total S/390 revenue* as a percentage of IBM revenue:

	1996	1997	1998**	1999**
S/390	26	23	20	19
AS/400	11	10	10	9
RS/6000	11	12	12	11
PCs	18	18	18	18
Services	21	25	28	31

* Includes hardware, software and maintenance
** Projected

Source: Morgan Stanley & Co., New York

IBM's G5 systems, available in September, will cost about $6,000 per MIPS, according to a source briefed on the announcement.

"It is a very important evolution of a popular and successful product line for IBM," said John Bevis, president of Share, IBM's mainframe user group in Gainesville, Fla. "IBM has done a lot to address performance and management issues needed for users to take their S/390's to new Web and electronic-commerce applications."

"The G5 systems will allow us to continue to add more horsepower without adding significantly to the number of systems that we have to manage," said Dan Kaberon, parallel sysplex project manager at Hewitt Associates, Inc. in Lincolnshire, Ill. Because each G5 system will pack almost double the performance of the previous generation, users will need less systems overall, he said.

Apart from the G5's raw performance boost, IBM also bolstered the memory subsystem, I/O channels, load-balancing and systems management capabilities.

The goal is to better handle large applications in mixed workload environments, in which a single system may be running separate ERP, decision-support and online transaction processing applications, said John Young, an analyst at The Clipper Group in Wellesley, Mass.

The workload-management capabilities are considered crucial to IBM's accelerating effort to push the S/390 into new markets such as ERP, electronic commerce and Unix server consolidation.

The G5's greater than 50% performance boost will erase much of that disadvantage and allow IBM to compete better with Unix vendors such as Sun Microsystems, Inc. and Hewlett-Packard Co., the report said. □

Web sales risk conflicts

CONTINUED FROM PAGE 1

puter CD-ROM drive, and items it has been selling solely to manufacturers, such as computer speakers.

"Some of our sales team is concerned that we are going to [hurt] some of our smaller dealers," Smith acknowledged. That is why Pioneer has no plans to begin selling its flagship home audio products direct, he said. This fall, though, Pioneer plans to roll out some new products that will be sold simultaneously by dealers and on the Web, Smith said during a panel discussion at Gartner Group, Inc.'s Electronic Commerce Conference in New York.

Richard Nardi, a consultant at KPMG International in Mountain View, Calif., said one client that he declined to name skirted the problem by referring all Internet sales leads to its existing reseller network. That company is more interested in increasing revenue than in cutting costs by eliminating the middleman, Nardi said.

"There are multiple ways [to deal with channel issues]," he said. "Nobody seems to know the right answer."

A BALANCING ACT

Industries from automotive to financial services and even insurance are wrestling with how to respond to the increasing popularity of Web commerce without wrecking existing, profitable sales channels.

"We don't want to aggravate them," said Hugh Anderson, enterprise architect at Hartford Life Insurance Co., of Hartford agents. Hartford is spending "huge amounts of money" on Internet-related technologies, but some of that is going toward Internet protocol communications systems between Hartford and its agents.

Putting out billing information and claims forms on the Web is one thing, but actually completing an insurance application online isn't an easy task for consumers, Anderson added. "We're working extremely hard to crack that nut . . . [while] not disintermediating anybody."

"It's shaken our company, believe me, to the core to deal directly with consumers," – Mark Smith, vice president, Pioneer

Smith estimates that the new electronic-commerce site will be less than 0.5% of Pioneer's sales in its first year and won't turn a profit for 18 months. Nevertheless, he said, "it's something that's very important to the company."

The project has also forced Pioneer to learn about retailing and handling things such as product returns and bad debt. "It's shaken our company, believe me, to the core to deal directly with consumers," he said. "It's been really healthy and really eye-opening. . . . It's given us a new perspective on what it's like to be a retailer." □

Reasons for Web shopping

Comparison shopping	56%
Convenience	53%
Variety	46%
Online prices	45%

Base: 850 consumers; multiple responses allowed

Source: Ernst & Young LLP, *(www.ey.com)*, New York

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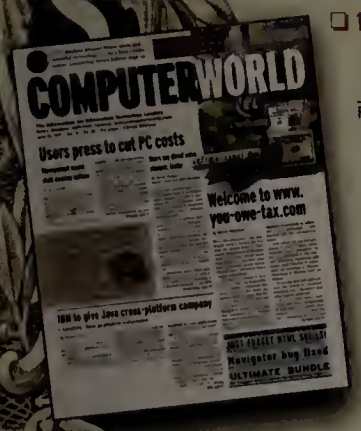

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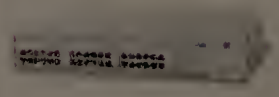

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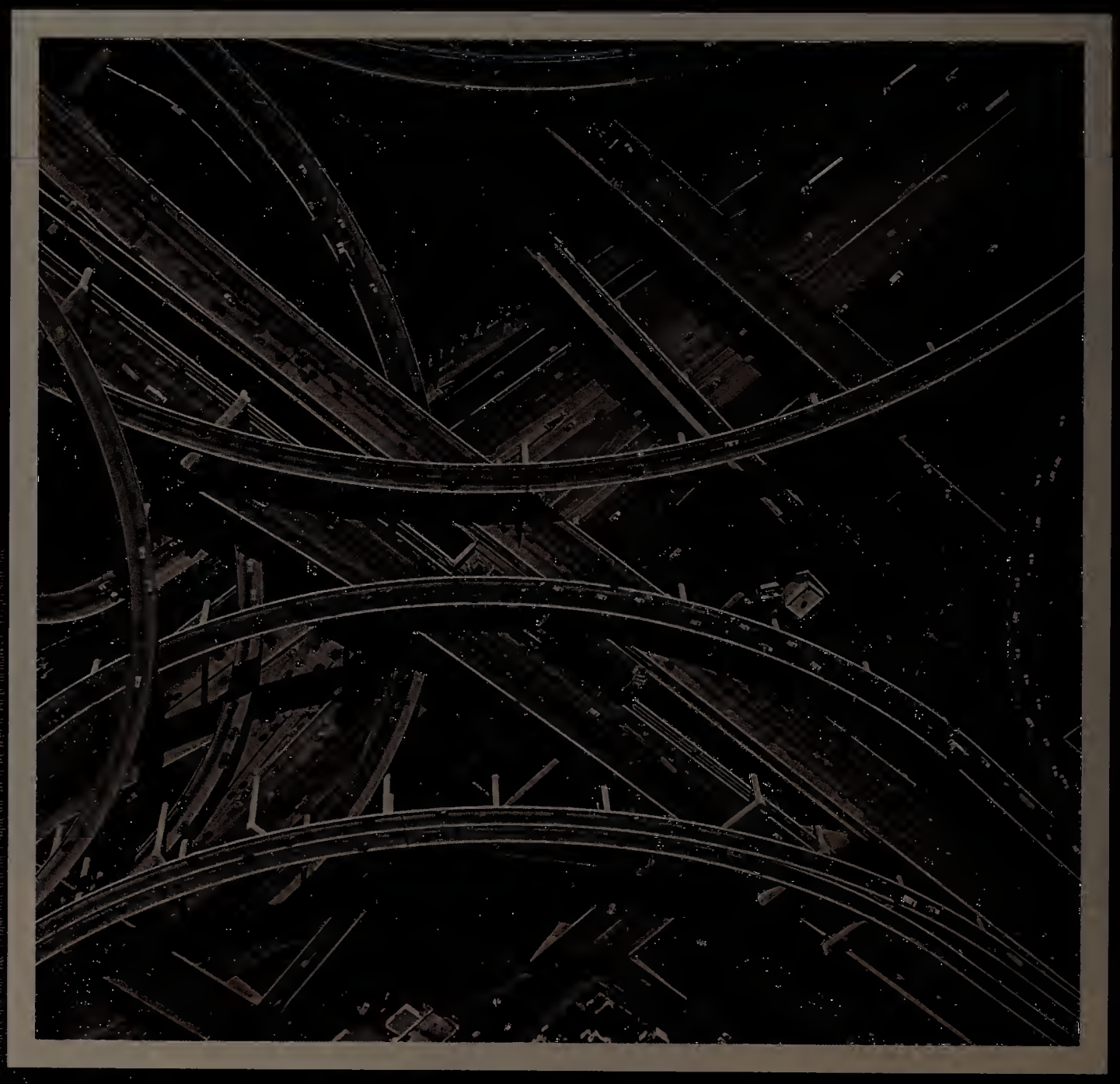

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Targeted Web ads are few; advertisers stick to basics

▸ *Young technology stalls marketing promise*

By Sharon Machlis

IN THEORY, companies advertising on the World Wide Web should be able to target ads right down to an individual's interests based on Web-viewing habits.

But in practice, few sites serve up ads tailored to specific surfers — although there are signs that could change later this year as the Web matures.

"If we could buy targeted ads, we would buy them," said Brad Aronson, president of I-frontier, a Philadelphia-based Internet marketing firm.

Targeting could allow someone who frequently viewed news stories about Italy to see ads for vacations or long-distance telephone rates to Italy.

"Everybody talks about it; everyone dreams about it," said Peter Winter, president and CEO of Cox Interactive Media, Inc. in Atlanta. "Nobody's got technology that scales robustly and reliably."

The lack of products that can profile and track consumers across multiple sites and then easily hook up with ad-serving software is one holdup, he said.

But there are other issues. Some ad buyers want to do general "brand awareness" campaigns instead of targeting. Those buyers view the Internet's advertising opportunities more like conventional broadcasting, where a major goal is to build good feelings about a company name. Also, creating a slew of individualized ads could be costly. And some marketers worry about the explosive privacy issue and that too much personalization could backfire.

"That's one of the reasons we're treading very lightly here," said David Rosenblatt, product manager at DoubleClick, Inc., an Internet advertising firm in New York. But he said he is optimistic that eventually there will be a way to do targeted advertising while safeguarding privacy.

Also, with the Web so relatively new, site managers say they need time for ad techniques to get more sophisticated. "I think it's something we plan on doing," said Tom Baker, business director at *The Wall Street Journal Interactive Edition*, which recently hit 200,000 paid subscribers. "Our No. 1 priority has been to some extent to get the basics right," such as properly serving and tracking ads.

> "Everybody talks about it; everyone dreams about it."
> – Peter Winter, Cox Interactive Media

And some people in the industry question whether advertisers want segmentation at a time when some media buyers still look at more conventional measures for a new medium such as exposure, building a brand name and counting ad click-throughs.

"If we knew that advertisers were dying for [targeting], we would probably be more aggressive," Rosenblatt said.

AIM FOR THE TARGET

But some major corporate sites are moving toward more targeted ads.

Hearst New Media is "just completing our [consumer] profiling system," said Kathryn Creech, vice president at Hearst New Media and Technology and general manager of Hearst's HomeArts Network in New York.

A tie-in to advertising capabilities should be ready in the fall. "We waited awhile [for available tools], then we decided we needed to move forward," she said. "You have to do a lot of custom work."

There are a few pioneers that are launching customized ad campaigns.

For example, First USA, Inc. in Wilmington, Del., the nation's third-largest issuer of credit cards, recently announced a five-year, multimillion-dollar deal to advertise on Excite, based on user demographics and on-site behavior, as well as what keyword searches users perform and the content areas they visit.

Integration to tie together systems that will perform those tasks is still in the works; no completion date has been announced.

Surfers will be profiled based on how they use the site, although only by a user identification and not their actual names, according to James Desrosier, Excite, Inc.'s executive vice president of marketing.

First USA has more than a thousand different credit cards developed with organizations such as universities and sports teams.

"We're all about segmenting," said spokesman Tony Plohoros. "We are finding [the Internet] is an efficient means of reaching people" — more so than print or broadcast ads. □

Technology snares new resumes on Web

▸ *'Spidering' helps automate job recruiting*

By Tim Ouellette

SOME BUSINESSPEOPLE are increasing their online recruiting efforts by staying off the Internet.

They are trying a different approach instead: resume spidering. Automated agents based on online recruiting Web sites track down the newest resumes posted on the Internet and automatically E-mail potential candidates.

"With millions of resumes floating around on the Web chased by tens of thousands of recruiters, speed has become a critical issue," said John Sumser, president of the Internet Business Network, an online recruiting consultancy in Mill Valley, Calif.

The spiders crawl through the World Wide Web overnight, looking for new resumes posted on free job boards, personal Web sites and the many Usenet news groups dedicated to job and resume postings. Then an automated greeting from the client company is E-mailed to the candidate.

That type of Web searching service is in its early stages. But Sumser, who researches the online recruiting market, said he expects spidering services to proliferate throughout the year.

Early users of the search agents agree.

"We get so many resumes from this, we don't have to search for resumes on our own most of the time," said Ellen Webber, corporate search center manager at Best Consulting in Kirkland, Wash.

But observers, including Sumser, said any proliferation of services such as the Resume Robot could lead to large-scale spamming of online job hunters. That means companies have only about another year to take advantage of resume spidering before it saturates the market and no longer provides any competitive advantage to recruiters, Sumser said.

> The spiders crawl through the World Wide Web overnight, looking for new resumes posted on job boards and news groups.

ROBOT HELP

Webber subscribes to the Resume Robot spidering service offered by Information Technology Talent Association LLC (ITTA) in Phoenix. She said she uses it to find resumes to forward to various Best Consulting departments. The company has hired many information technology workers across the country with the help of the Resume Robot service, she said.

The speedy E-mail to the candidate gives the Resume Robot client a jump on the competition, while avoiding the typical deluge of telephone calls online job hunters are used to, Webber said.

Resume Robot has been available since late last year, but users are just starting to flock to the service, said ITTA CEO Tom Murray.

A subscription to the service costs $500 per month, and that includes access to ITTA's select resume databases (*www.prorecruiter.com*). Members can post job openings on those databases and can trade resumes from their own corporate databases.

One recruiting site, Online Career Network (*www.occ.com*), also introduced search agents as part of its offerings.

"I think the largest employers will want to use this," said Harvey Daniels, president of the Technical Recruiters Network, a 700-member organization of corporate recruiters based in Chicago. "Their recruiters log on [to the Web] every day and don't want to have to go through all those sites." □

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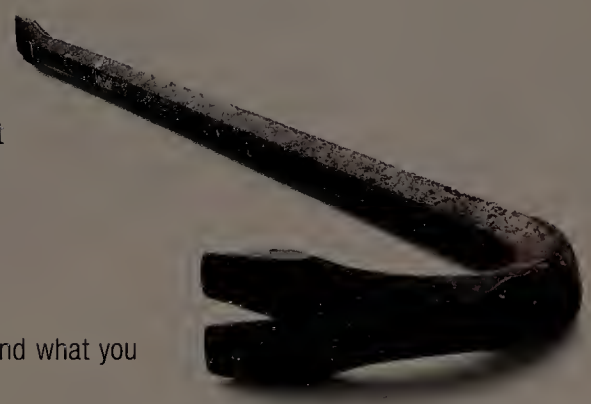

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Area codes may dry up by 2025

▸*Number changes a network, business nuisance*

By Matt Hamblen

YOU ARE HEARING it now: We are headed for the year 2025 problem.

Experts believe the supply of three-digit area codes in North America will dry up as early as 2025, requiring telephone numbers to carry 12 digits instead of 10. And that would require sweeping changes to phone switches and other network devices, analysts said.

Network managers seem mostly blase about current changes, but the business costs — replacing stationery and business cards, for example — have users groaning. Reprogramming switches for new area codes isn't too much of a time drain for staff, network managers at large user companies said.

As it is now, there is a tsunami of demand for more area codes, said James Deak, a planner at Lockheed Martin IMS in Washington, which manages area codes for North American carriers.

The high demand is the direct result of competition from new phone carriers, which was ushered in by the Telecommunications and Deregulation Act of 1996, and the explosion of PCs and other devices connected to phone lines, Deak said.

There are currently 194 area codes nationwide, up from the 86 originally created in 1947. The growth in area codes has risen the most just recently — from 12 added in 1996 to 32 last year. Another 30 area codes are expected to be assigned to regions this year, with a high probability of 30 to 40 more in each of the next two years, Deak said.

California is one state that has seen area code commotion (see map), and Massachusetts last month got caught in the national storm.

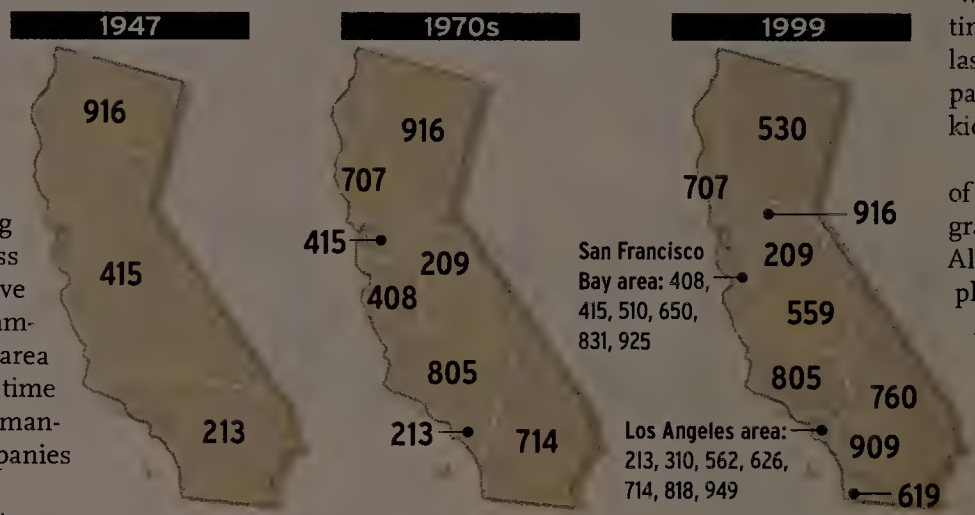
The high demand for more area codes is partly the result of competition from new phone carriers.

After two area codes for metropolitan Boston were added last year, Massachusetts officials were caught off guard when Lockheed Martin IMS told them the state will need two more by 2000.

"We're looking at this with a lot of suspicion," said Kim Hinden-McDonald, a spokeswoman for the state Office of Consumer Affairs. Businesses and consumers bombarded the agency with complaints during the last area code change. "We thought we'd have five years before needing more," she said.

AREA CODE GROWTH

The need for telephone numbers has led to an explosion in new area codes. Tracking the growth in California:



When an area code changes, network managers must reprogram phone switches and sometimes hundreds of preprogrammed PCs and fax machines. Several network managers said they don't even track the cost of such changes because they are insignificant in terms of work hours. But calls can't be made properly without the changes.

Business managers said they have to order new advertising signs and stationery — all the way down to business cards for workers — and inform customers and suppliers.

Westwood Group, Inc. in Revere, Mass., which operates Wonderland Greyhound Park, last year spent an estimated $10,000 to update business cards and stationery from the 617 area code to the region's new 781 area code. But Westwood Group hasn't placed a cost on the conversion of phones, modems and faxes.

"I'm kind of surprised they want to change the area codes again so soon," said Paul Sarkis, executive vice president at Westwood Group. "The next time around, the fix should last 10 years. Let's take the pain once and not have to the kick the dog twice."

William C. Lazarus, director of telecommunications at Integrated Health Services, Inc. in Albuquerque, N.M., oversees phone services for nearly 40,000 workers nationwide and has grown to accept the ordeal when an area code changes somewhere.

"It's just something we've had to embrace, and it's an ongoing management issue," Lazarus said. "What's frustrating is when you don't know the change in an out-of-state area until right when it happens."

In 1994, Lazarus oversaw the transition at his office to new area codes that added integers other than 0 or 1 in the middle. Some older switching devices couldn't recognize the new area codes and needed updated code installed at a cost of about $2,000 for each of 60 switches nationwide.

"Having to make all the changes makes you wonder how productive that cost is," Lazarus said. □

Area code overlays

Lockheed Martin IMS is trying to get carriers and other vendors in Boston — alarm companies, for instance — to agree on whether to split up that region's 617 area code in two years or "overlay" a new area code.

In an overlay, existing customers would keep their phone numbers, and new customers added in that area would receive a new code.

Overlays are used in New York and Maryland, where dialing with 10 digits — up from seven — is required for local calls. Overlays are coming for the Atlanta area and throughout Colorado.

The disadvantage of an overlay is that a customer may have a different area code within the same building for a new line, analysts said. But several users have said they want it.

"An overlay is preferable because I don't want to have to change all my existing numbers, even if it means a new number added has a different area code," said James F. Cunnane, manager of distributed systems at Insurance Services Office, Inc. in Pearl River, N.Y.

The firm runs a dial-in service for independent insurance agencies to call for insurance rates. Cunnane said having to ensure users access to a new area code "would be incredibly inconvenient."

Analysts said giving small blocks of phone numbers to carriers can slow area-code growth. Carriers get numbers in blocks of 10,000. A rationing system would prevent the hoarding of unused numbers. — Matt Hamblen

Year 2000 labor crunch pressures tech workers

By Tim Ouellette

OVERWORKED IT staffs have more pressure on them than ever but they are giving up a lot of project responsibility in the process.

A new survey by Meta Group, Inc. in Stamford, Conn., has found that the combination of year 2000 project demands and a shortage of qualified information technology workers has increased staff turnover rates, levels of outsourcing and dependence on business units for some IT work.

"The U.S. IT labor force is now working on overtime," said Howard Rubin, a Meta Group research fellow.

But those conditions also have made U.S. IT workers more productive than ever before. The poll of 1,100 IT organizations found that IT workers in the U.S. now rack up 7.7K LOCS (lines of code produced per professional per year) compared with 4K LOCS last year.

Still, productive workers aren't always happy workers. Businesses have seen staff turnover rates climb from about 14% in 1996 to 30% among some companies today.

Productive workers aren't always happy workers. Businesses have seen staff turnover rates climb from about 14% in 1996 to 30% among some companies today, according to a Meta Group study.

INDEPENDENT USERS

Information systems groups used to act like a pharmacist handling prescriptions, Rubin said. "Now the function is more like an over-the-counter drug where users do a lot of things on their own," he said.

To retain workers, companies such as Kraft Foods, Inc. in Northfield, Ill., have special business-oriented training to help their IS staffs feel connected to the company's business needs.

And Kraft recruits a new type of worker.

"The IT professional of the future for a company like ours will be very broad in a technology education base, very customer-focused and will have strong people skills," said Margaret Schweer, Kraft's director of IT human resources. □

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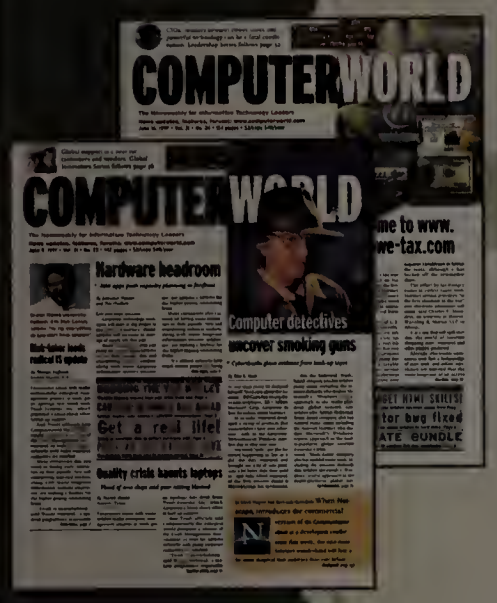

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Target: Customer loyalty

▸ *Free E-mail gives Web sites a new marketing route*

By Barb Cole-Gomolski

WHAT DO American Express Travel Related Services Co., Netscape Communications Corp. and a San Francisco-area radio show called The Doghouse have in common?

All three are offering free E-mail accounts to build customer loyalty and attract users to their Web sites.

In fact, a growing number of companies view free Internet E-mail as a low-risk, low-cost way to get closer to customers and maybe boost revenue.

The draw for users is that they can forward messages from several E-mail boxes to the free account, which can be accessed from any computer that has an Internet link.

In the case of American Express, anybody can get an AmExMail account by signing up at *www.amexmail.com*. American Express card-holders will get an extra 5M bytes of E-mail storage and toll-free telephone support.

Like Amex, Netscape and KYLD-FM, and The Oakland Athletics baseball team also is offering free E-mail to its fans.

By offering AmExMail, the company provides a service — E-mail — that more and more people are relying on, said Molly Faust, a spokeswoman for the American Express information technology group. Plus, the service may earn revenue and generate sales leads through banner advertising that users see when they log on to retrieve their E-mail.

POSITIVE RESULTS

When The Doghouse, a morning show that airs on KYLD-FM in San Francisco, added free E-mail to its World Wide Web site (*www.thedoghouse.com*), people outside the listening area started signing up, said Craig Gonzalez, the station's webmaster.

"This has really broadened our audience. We're getting people from all over the world," he said.

The show, which plans Internet broadcasts, hopes to turn E-mail users into listeners.

Netscape announced its free WebMail service April 22. Company officials said the goal is to draw more users to the NetCenter Web site (*www.netcenter.com*). The service will let users forward E-mail from up to seven accounts and includes virus-scanning and antispam features.

Mark Levitt, an analyst at International Data Corp. in Framingham, Mass., said both Amex and Netscape's approach to free E-mail makes sense.

Both companies have outsourced their service to USA.NET in Colorado Springs, one of the largest providers of free, Web-based E-mail. USA.NET will run the E-mail networks and handle customer support. "Neither the effort nor the risk of using an outsourced Web E-mail service is significant," Levitt said.

"If Amex had attempted to operate its own service, I would have worried about potential disaster," he said.

Customers who sign up for free E-mail would probably tolerate outages, because they aren't paying, Levitt said.

Analysts questioned the branded E-mail accounts' value when there are companies that already provide such services. They include USA.NET, Juno Online Services in New York and Microsoft subsidiary Hotmail Corp. in Sunnyvale, Calif.

"If consumers can get [free E-mail] from their Internet service provider, why would they go anywhere else?" said Nina Burns, president of Creative Networks, Inc., a Palo Alto, Calif., research firm. □

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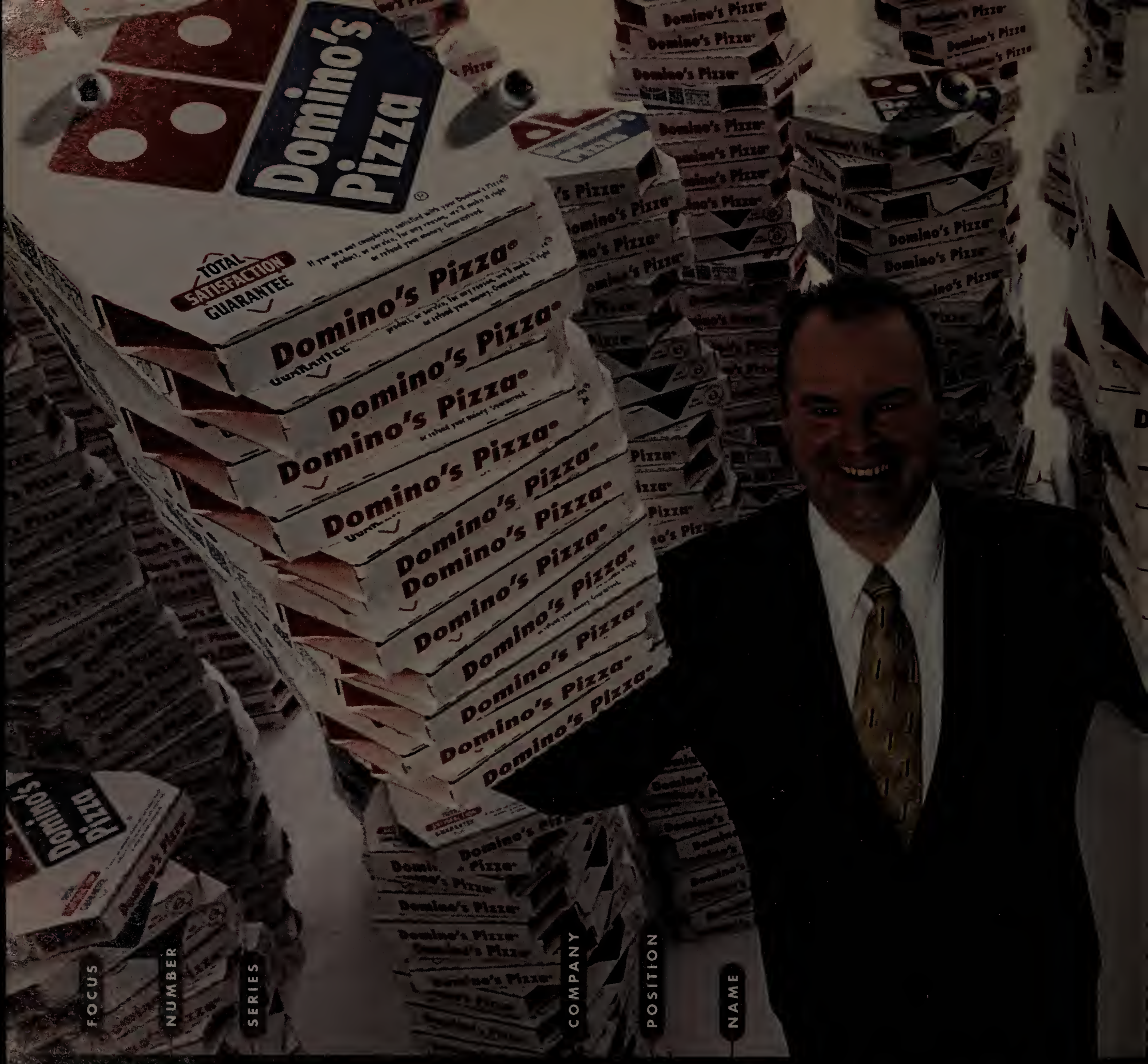
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QUICK STUDY

Hot trends & technologies in brief

56K bit/sec. modems

DEFINITION: These analog modems transfer data at 56K bit/sec. Modem is an acronym for MOdulator/DEModulator, which refers to the process of transmitting data over a telephone line. Analog means the connections are based on sound frequencies. Digital connections are based on off-and-on circuits.

One standard helps make 56K a reality

By Stewart Deck

LAST YEAR, users were expected to buy sparkling new 56K bit/sec. modems in hopes of doubling their Internet access speeds.

Unfortunately, there was some uncertainty surrounding those modems because of two competing standards.

AT ISSUE
No guarantees on speed

"The competing standards were incredibly annoying to users," says Brad Baldwin, an analyst at Framingham, Mass.-based International Data Corp. (IDC). "I blame the entire industry's slowdown in remote access on the stubbornness of the vendors and the way the competing standards were handled."

Then hope arose. A single international standard — called V.90 — was agreed upon this February by the International Telecommunication Union.

That gives users a reason to purchase these modems. Shipments of the modems are expected to almost triple this year (see chart). Also helping is IBM, which will be the first large Internet service provider to roll out a service that supports V.90.

As of May 1, dial-in users of the IBM network in more than 20 U.S. cities can connect at 56K bit/sec. speeds over the V.90 connections. "If IBM has an easy time with their network software upgrade, then other [service providers] will follow suit very quickly," says Abner Germanow, an analyst at IDC.

According to John Hunter, an analyst at TeleChoice, Inc., a consultancy in Verona, N.J., there are some alternatives to 56K bit/sec. modems, such as Digital Subscriber Line (DSL) and cable modem service — but they may not be better choices.

Hunter explains: "56K modems are proven, low-cost and have ubiquitously available connections. With DSL there are still a lot of technical difficulties to be worked out. And with cable modems there are security concerns and service degradation troubles. And the availability of both DSL and broadband cable modem service is still very small compared to 56K service."

But users aren't guaranteed to get the blazing speed they thought they would with 56K. For one thing, the Federal Communications Commission has declared, at least for now, that 56K modems can transmit data at a top speed of 53K bit/sec. Poor telephone line quality can hamper transmission speed even further, and some older lines can't handle 56K at all.

And even if everything works perfectly, 56K modems are faster in only one direction: getting data from the Internet to users' PCs.

That's fine for World Wide Web surfing but not for heavy multimedia applications such as desktop conferencing.

One analyst says the speed isn't very different from what's available today. Jim Balderston, an analyst at Zona Research, Inc., a consultancy in Redwood City, Calif., says, "56K is just an incremental step. It's simply a faster horse for your buggy." □

QUICK STUDY ONLINE

For research, vendors and related articles, go to *www.computerworld.com* Click on Resource Center. Under In Focus, click on QuickStudy.

Shipments of 56K bit/sec. modems in North and South America

Source: VisionQuest 2000, Inc., Moorpark, Calif.

COMPARING HIGH-BANDWIDTH TECHNOLOGY

	56K bit/sec. modems	Cable modems	DSL
PROS	■ Can be used anywhere there is a phone jack ■ Reliable technology ■ Low cost	■ 1M to 38M bit/sec. transmission speeds ■ Provided by local cable TV companies ■ Connection always open; users don't have to dial in	■ 200M bit/sec. transmission speeds ■ Connection always open; users don't have to dial in
CONS	■ Work at top speed of 53K bit/sec. and only in one direction ■ Internet providers are in early stages of upgrading to V.90 standard	■ Not completely secure ■ Available only in select areas	■ About 30% more expensive than 56K modems ■ Very young technology; many technical difficulties are still being ironed out ■ Available only in select areas

Are there technologies or issues you would like to learn about in QuickStudy? Send your ideas to QuickStudy editor Stefanie McCann at ***stefanie_mccann@cw.com***

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HAND CHAOS

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www.microsoft.com/digital_nervous_system/

OPINION

Paperwork 2000

Can you hear it? That distant rustling, like a billion pieces of paper being shuffled? That's the year 2000 paper trail, being paved with survey forms, questionnaires, product compliance inquiries and status reports.

Just when you thought your year 2000 project manager's workload was under control, here it comes: a rising tide of paperwork and another batch of legal implications for year 2000 date-change work.

Last week, the Federal Reserve Board weighed in with its worries about a worldwide recession in two years. So as public awareness grows, interest in the year 2000 paper trail is sharpening, as we noted in our recent Page One story, "Be careful what you say on Y2K," [CW, April 27]. There is a fine line between keeping your business partners well-informed and exposing your own company to future lawsuits.

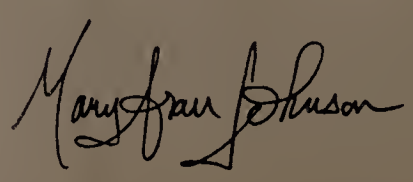
Indeed, the words from the legal camp sound ominously like a new kind of Miranda warning: Anything you promise to have fixed on time can and will come back to bite you if it screws up.

So what to do? The best advice for coping with millennium bureaucracy comes from your peers and colleagues. For starters, don't guarantee anything in writing — but document everything. Use weasel phrases such as "To the best of our knowledge . . . ."

If you haven't got one already, create a process for contacting suppliers, vendors and business partners. Let them know what you're doing and find out where they stand with their year 2000 work. Corral the bits and pieces of the paper trail in a database. Methodology and organization — the particular talents of so many IT professionals — will be your salvation.

But don't count on winning any popularity contests. "Everyone I contact wishes we'd just crawl under a rock and die," said one year 2000 manager charged with tracking the paper trail with his company's suppliers.

In the end, doing what's right will be its own reward. As Chas Snyder, director of year 2000 at Levi Strauss & Co., so aptly put it in our Page One story, "Lawyers fan the flames, but this is a supply-chain problem. It's in all our interests to work together."



Maryfran Johnson, *executive editor*
Internet: *maryfran_johnson@cw.com*

LETTERS

Who should pay when employees stray?

HOW FASCINATING that vendors, while charging large sums of money for their services or products, will then use the knowledge of their customer's staff to recruit away top technical talent ["Hey, don't steal my staff!" CW, March 2].

As a major information technology search firm, we frequently see the havoc such situations cause. Search firms include a "hands-off" clause in every contract, usually for a period of one to two years. This policy should be formal in every vendor/client contract.

Also, companies need to spread the word and publicize the names of duplicitous raiders. Let's see how many people they need to recruit when doors to new business are closed to them.

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I READ YOUR "Hey, don't steal my staff!" article with utmost amazement. What about the employee's right to the pursuit of advancement? What about the Constitution and Bill of Rights? These managers are simply breaking the law.

Will you run an article about the employee's right to seek a better job?

C. B. Hatchett
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drcbh@jps.net

THE ACT OF including nonsolicitation clauses in contracts with vendors and contractors is unethical. It subjects company employees to a noncompete clause, something that they did not agree to accept.

If you provide training to employees and that makes them more valuable in the job market, you must make the effort to retain them. Do not blame your vendors or competitors if they can provide something that you cannot.

If you train employees, you must make the effort to retain them.

Charles Kreiter
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Section 1706 created cartel

IN REFERENCE to editor Paul Gillin's column on Section 1706 of the IRS tax code ["Repeal this law," CW, March 30], I've noticed in discussions with vendors' account representatives that a pattern has emerged. The vendors try to make the highest margin they can and pass as little as possible back to the client or the independent contractor. I suspect this greed for higher margins is one of the reasons Americans find themselves not being considered for more positions over foreign IT workers.

I think the intent of 1706 was to create a cartel for the big consulting companies, and that 1706 cartel should be broken up.

Noah Stern
President
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When did you last see a businessperson use a pay phone?

COLUMNIST David Moschella's work is usually insightful, but his column in the March 2 issue of *Computerworld* ["Leave your laptop at home"] can be summed up in three words: wrong, wrong, wrong.

He says E-mail access will achieve the ubiquity of the telephone and that laptops will be replaced by common points of E-mail access. However, the proliferation of cellular phones invalidates his premise. The phone is everywhere — our homes, our businesses, our streets — but people still purchase cell phones for the convenience of having a personal phone.

Who's going to want to hunt down a "public use" laptop when they could have one that is at their use instantly, whenever they want it? What we'll see instead of the extinction of laptops will be their evolution into handhelds and the like.

Eric J. Smith
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Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

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May 4, 1998

White Paper

TECHNOLOGY **Forum**

Internet Security:

Can Best Practices Overcome Worst Perils?

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Balancing Net privacy with the proliferation of access has IT managers . . .

. . . Between a Rock and a Hard Spot

Business is entering a new era, one in which Internet technologies will be incorporated into most, if not all, financial transactions. U.S. businesses are furiously working at

By Priscilla Tate

Technology Managers Forum

patching web technologies into existing applications and building the public network into their corporate networking infrastructures.

Most major corporations are already providing Internet access from the desktop. According to a 1997 survey of nearly 200 members of the Technology Managers Forum, three in five corporate users, or 60%, currently have the ability to access the Web. The respondents to the survey expect that number to rise to 80% in the next 12 months.

The respondents also said that almost half the desktops in their companies can access the Internet from their corporate LAN and they expected that number to increase to 60% in the next 12 months.

With Internet access proliferating this rapidly, one might think that the biggest obstacle to electronic commerce would be bandwidth. But it's not; the #1 problem is security.

Indeed, few professionals today face greater challenges than those IT managers who are developing Internet security policies for rapidly changing network infrastructures. How can they balance the need for Internet security and Internet access? Are their budgets for Internet security adequate? What impact will intranet, extranet and web application development have on security architectures? How can they come up with best practices for developing Internet security policy?

This supplement will explore some of these issues revolving around Internet security and will try to help these beleaguered IT managers come up with answers to some of these questions.

SECURITY PROBLEMS WITH THE INTERNET

Part of the problem is that the Internet was developed for interoperability, not impenetrability. A byproduct of the military/industrial complex, the major Internet protocol, TCP/IP (Transfer Control Protocol/Internet Protocol), was developed by scientists to exchange information about government-sponsored research.

ILLUSTRATIONS BY WALTER FOX TREE

Today, 40 years later, this same technology is being used for the exchange of information among business entities that are known to each other only via means of electronic identification.

But there is only so much that can be done using these protocols to make the Internet tamperproof. The Internet breaks information pieces into packets. These packets can then be routed anywhere, using any Internet Service Provider (ISP), before the packets are reassembled at their destination.

Secure HTML, an instruction set built into Web servers to encrypt packets so they cannot be easily read, adds security but slows down the transfer of information. The same can be said of the SET (Secure Electronic Transactions) standard, which is used to encrypt credit card transactions over the Internet. Although these slower transactions may not be noticeable to the casual user, they may still be vulnerable to attack at the ISP level.

If someone wanted to attack a transaction, they could get everything they need at the ISP level, without breaking an encrypted password. All they would have to do is intercept the password. Because information travels over many different ISPs in the public network, the security of the information is only as strong as the weakest ISP, which can

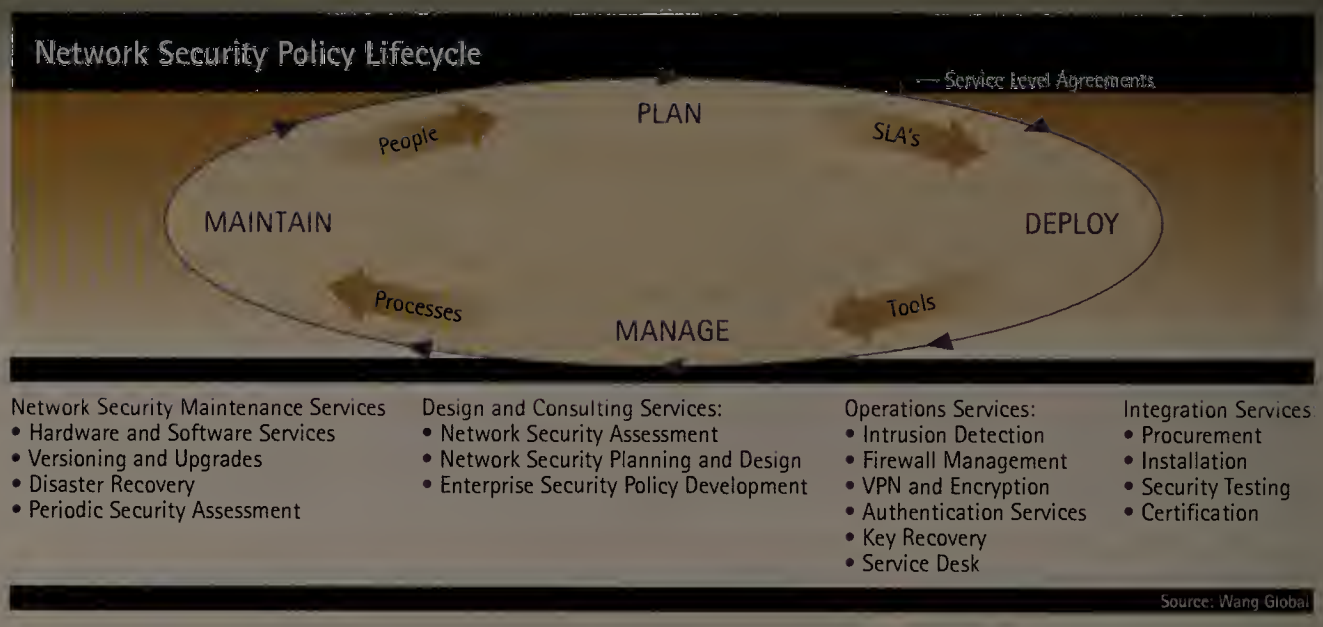
Security integration puzzle

An entire industry has developed around Internet security. This industry consists of products that detect intrusions into the network, firewalls, network security protocols, tools for preventing virus attacks, multiple encryption schemes, biotechnology, virtual private networks (VPNs), authentication technologies such as fingerprint recognition, digital signatures and single sign-on certificates, and key recovery systems.

In the past 12 months, the Internet security industry has further matured by undergoing a flurry of mergers and acquisitions. But despite all these changes, there is considerable confusion in the marketplace. For instance, there is still substantial overlap between security management and network management products. And interoperability standards for network security have yet to be established. With products coming from multiple vendors, integrating these products will be a challenge (see diagram below) for IT managers. However, once interoperability standards for network security protocols are reached, e-commerce will become a standard operating procedure.

ENCRYPTION
- Symmetric
- Asymmetric
- Government
- Certificate Management

NETWORK SECURITY PROTOCOLS
- IPSEC Initiatives
- Point-to-Point Tunneling Protocol
- X.400, X.500 IEEE Protocols

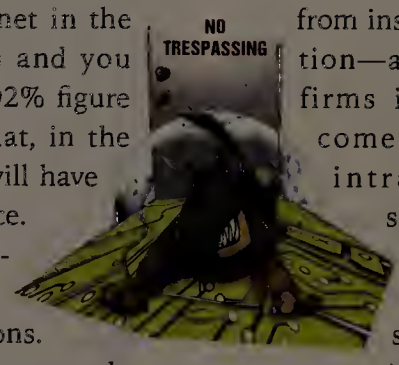


be the purchaser's provider or the vendor's provider. In the past, ISPs have been vulnerable to such attacks.

The truth is that nine out of ten break-ins come from inside the organization—a statistic that most companies conveniently ignore when it comes to designing intranet security solutions.

SECURITY PROBLEMS WITH INTRANETS

Intranets—the intra-company applications that use Internet technologies and protocols to transfer information behind the firewall—are rapidly growing in popularity. According to the survey, 53% of organizations have already deployed intranets, and another 23% are developing or implementing one. Add the 16% planning to develop an intranet in the next 12 months and you get a whopping 92% figure for companies that, in the very near term, will have an intranet in place.



A security breach in a small area can permeate the entire system. When everything is more or less connected, it is hard to poison just part of the well.

However, intranets are hardly airtight applications. They have their own technological limitations. And where corporate applications use the public Internet, they are vulnerable at the ISP level. So it is easy to see why Internet security is the #1 problem for technology managers. If there is a security breach in a small area, it can permeate the entire system. When everything is more or less connected, it is hard to poison just part of the well.

When most people think of security threats, they think of defending themselves from external attacks. They think of viruses that infect an organization from the outside. They envision hackers breaking into their information vaults.

But the truth is that nine out of ten break-ins come from inside the organization—a fact that most firms ignore when it comes to designing intranet security solutions. That is why it is important to create separate security levels for Internet, extranet and web applications and give users access to applications based only on their business requirements.

It is easy to say that intranets, extranets and web site applications should exist in security zones. . .but hard to do. Applications have communities of users and as networks expand using Internet technologies, information is traveling across physical corporate boundaries. To protect this information while, at the same time, keeping the application easy to use is a tall order.

In this "zone of access" security scheme, the greatest protection would be afforded to corporate information, the information traveling over intranets. This information would fall into what we will call Zone 1.

The extranet applications which connect corporate users with their suppliers, or to their designated business partners, would fall into Zone 2. Information exchanged over extranets would therefore have to cross two security zones in order for a transaction to be complete.

The final perimeter, the web site, would be in Zone 3. At this boundary, information traveling to and from the corporate center would be crossing three security zones, and would have to meet the access requirements at each border.

Internet security products must be implemented at multiple levels within an organization and organizations must develop security policy which includes continual monitoring at every border where information can get from one security zone to the next.

THE SKY IS NOT FALLING

Even companies that have yet to implement a comprehensive enterprise security strategy have firewalls, virus protection and user authentication technologies in place. Respondents to the survey indicate that businesses are just beginning to implement these and other security measures on the intranet. In the next 12 months, the greatest growth will be in authentication technologies such as message authentication, digital certificates, single sign-on, tunneling, virtual private networks and key recovery systems. (See chart below, "Internet Security in Fortune 1000 Companies.")

The infrastructure effort, too, will be well-funded. . . for some firms, lavishly so. One in five companies surveyed report they will spend $1 million or more on infrastructure specifically for intranet-related activities. For large companies such as these, the main problem may not be the cost of Internet security. The real challenge for IT managers at these companies is to discover

Internet security products must be implemented at multiple levels within an organization and organizations must develop security policy which includes continual monitoring at every border where information can get from one security zone to the next.

In the next 12 months, the greatest growth will be in authentication technologies such as message authentication, digital certificates, single sign-on, tunneling, virtual private networks and key recovery systems.

Internet Security In Fortune 1000 Companies

	PERCENTAGE THAT HAS NOW	PERCENTAGE THAT WILL IMPLEMENT WITHIN 12 MONTHS
Authentication (for users)	76%	48%
Authentication (for messages)	27%	34%
Authentication (for servers)	47%	41%
Digital certificates	11%	30%
Encryption	35%	42%
Firewalls	88%	50%
Key recovery or escrow	5%	14%
Single sign-on	17%	36%
Tunneling	15%	27%
Virtual private connections	15%	29%
Virus protection	82%	44%

Source: Technology Managers Forum

which security strategies can be trusted to work with applications and infrastructures that are constantly changing.

POLICY NOT TECHNOLOGY

The best way to choose security products and services for the enterprise is to begin, not by studying the technology options, but with an assessment of security needs. Establishing security policy starts with understanding your business, which can be done by answering these five questions:

1. Which information is critical to the business?
2. Who creates that critical information?
3. Who uses that information?
4. What would happen if the critical data were stolen, corrupted or lost?
5. How long can we operate without access to the critical data?

Implementing network security is a four-stage process. First, you must assess the company's existing network security and define a security policy. Next, identify security products and services that meet all of your needs and implement them in your organization.

The charts to the right are based on a 1997 survey with Technology Managers Forum. All companies report spending levels staying the same or increasing for intranet security. Spending levels for building web-capable network infrastructures show the highest rate of increase over the next 12 months.

Expenditures on Intranet-Related Activities

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Under $50,000	16%	22%	42%	45%
$50,000-$99,000	22%	22%	25%	20%
$100,000-$249,999	18%	20%	15%	20%
$250,000-$499,999	12%	13%	7%	5%
$500,000-$999,999	11%	7%	4%	4%
$1 million-$2.49 million	10%	9%	4%	3%
$2.5 million-$4.9 million	4%	2%	0%	1%
$5 million or more	8%	4%	2%	3%

Breakdown of Spending on Intranet-Related Activities

[illegible]	[illegible]	[illegible]	[illegible]
Browsers	39%	49%	10%
Database software upgrades	41%	49%	6%
Desktop hardware upgrades	47%	42%	9%
Desktop operating system upgrade	50%	39%	7%
Network infrastructure for Web application	54%	37%	4%
Security for intranets	62%	35%	0%
Server hardware	53%	39%	6%
Server software	52%	37%	8%
[illegible]			
Application development	52%	41%	4%
Data migration projects	44%	48%	2%
Database interface development	42%	49%	3%
Site content administration	47%	47%	3%
Site content development	50%	43%	3%
[illegible]	40%	45%	2%
[illegible]			
Application development	37%	43%	10%
Network management	21%	57%	10%
Security	26%	50%	10%
Site hosting	21%	53%	14%

Source: Technology Managers Forum

After that, you will need to set up a management program for all the Internet security within the organization. This may include establishing procedures for managing a security service desk, firewalls, VPNs, encryption, performing audits, clearing up virus attacks and recovering keys. In the final stage, the phase known as maintenance, security measures are kept in sync with business and technology requirements.

To paraphrase Thomas Jefferson, the price of security is eternal vigilance. Viruses get more clever (and more damaging). Other threats to the security of information systems are also constantly evolving. Periodic assessments of security will signal that certain changes in security policy are required and the cycle will start over again.

An organization may have multiple application projects or networked groups that are at different phases in a security project lifecycle. But the methodology of keeping security effective in an organization will still be the same: plan, deploy, manage and maintain. (See illustration on p. 4, "Network Security Policy Lifecycle.")

The only consistent way to establish security in environments with intranets, extranets and web sites that transport corporate data over public and private networks is to make security policy a top priority and move to implement best practices for all phases of the security policy lifecycle.

A recurring theme in the study on intranet deployment is the need to find and retain skilled intranet personnel. Staffing costs will take up a larger part of intranet budgets and outside consultants will increasingly be used to help manage and maintain the ongoing security process. (See chart on p. 6, "Expenditures on Intranet-Related Activities.")

SECURITY: A COST OF DOING BUSINESS

The business case for using Internet technologies is compelling despite the security risks. The benefits IT managers are finding from intranets include reduced printing and paper costs; improved efficiency of workflow applications; improved customer service; better data collection and distribution; faster and better decisions; and lower costs for deploying client/server applications to the desktop.

IT managers say that although security is their top concern, that will not stop them from implementing intranets and extranets at a furious pace. Still, with intranets, extranets, remote communications and Internet access all riding on the same network infrastructure for transport, it is easy to understand why so many of the technology managers surveyed named security as their top priority. . . and why so much of their time in the next few years will be spent trying to come up with cost-effective security solutions.✦

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This White Paper was written by Priscilla Tate, who is founder and director of Technology Managers Forum International, a professional association that provides forums for information exchange between technology providers and technology consumers. The object of these forums is to deliver more meaningful business solutions to the corporate community.

Priscilla Tate was also formerly executive director of the Microcomputer Managers Association. In addition, her background spans the areas of journalism, market research, product development and application development.

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CW Enterprise Publications has published other White Papers on the subject of Internet deployment and related topics. For more information on these (or other) White Papers or to purchase reprints, contact Heidi Broadley at (508) 820-8536 or at heidi_broadley@cw.com.

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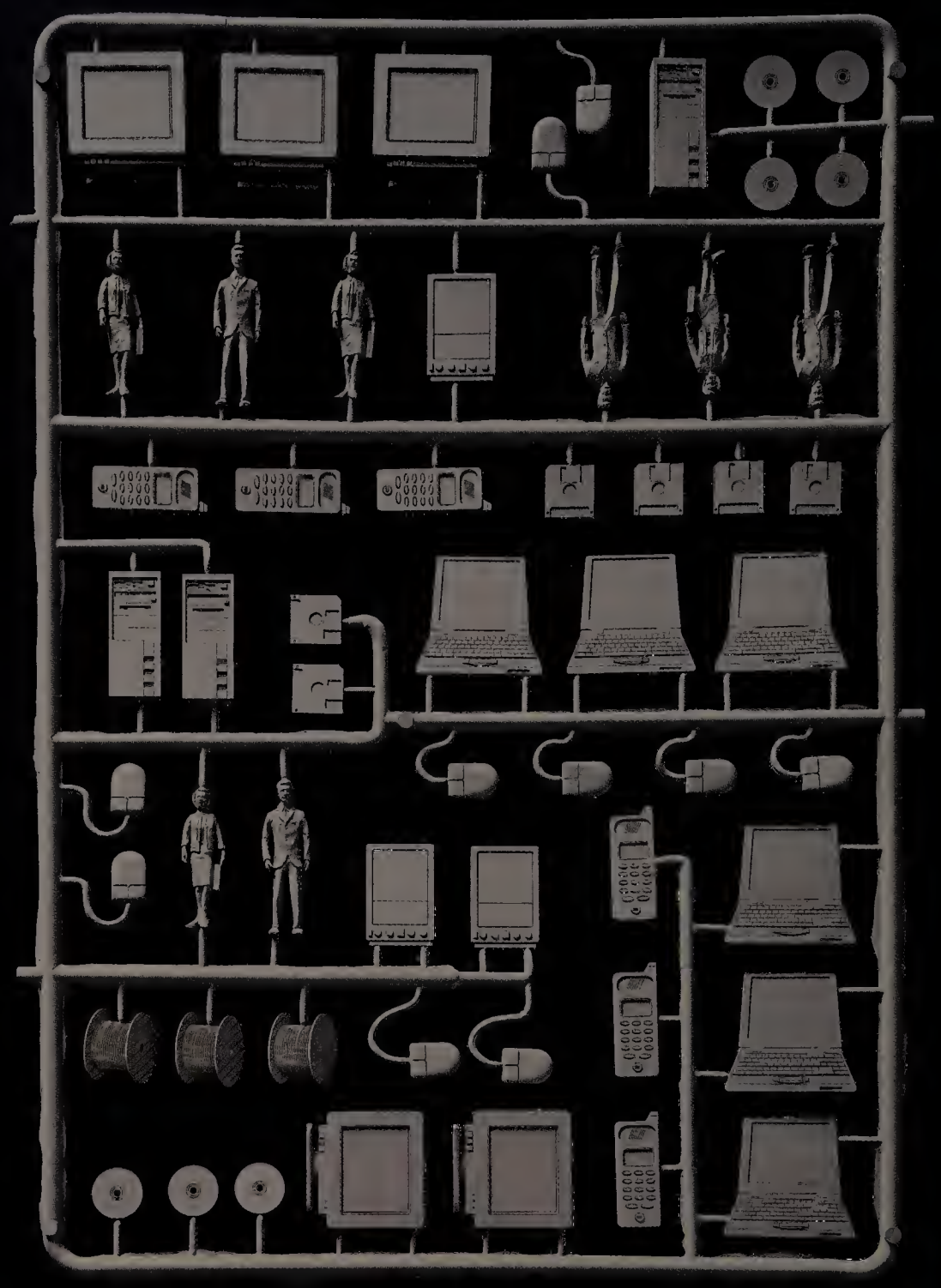

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Don't spam my kid!

James Connolly

I didn't really care about the spam issue until one recent Sunday night. Me, I get a ton of E-mail. And yes, some of it is junk. The fix is simple: I delete it. Then my 9-year-old son — new to the Internet experience via America Online — wanted to check his E-mail.

He's had his own user name for just a month, and only two friends at school and his aunt in Maine know his address.

Sure, check your E-mail, kid.

When he asked whether he should just delete the junk mail, it was still no problem. He knows to click "No thanks" on those obnoxious AOL ads pushing credit cards, mortgages and software utilities. (Note: AOL doesn't exactly have clean hands in the spam debate. Those ads aren't spam in the pure sense, but the intent is the same). I figured the AOL ads were the extent of his mail.

First Amendment? Let's *read* these bums their rights.

But wait. I thought: If he clicks in the wrong place, he might inadvertently buy something. His junk mail was worth a look.

"Hot," "sexy," "horny," "teen-age girls" . . . wait a minute. The subject lines read like the scratchings around a public telephone or bus stop. No need to read the ones that had the "f" word in the subject field. I opened a message labeled "hey, you" (son no longer in the room) and was hit with a full-color photo of a stripper — post strip.

My kid goes on AOL to do E-mail, research homework and play a couple of online games.

The parental controls limit him to the "Kids Only" area, and believe me, his parents do watch over his shoulder. Yet he had received more than 50 E-mail messages in the two weeks since he had last logged on. Half were basic porno. Half were sales pitches: credit cards, loans and investment opportunities (right!).

No sign of any E-mail from the aunt in Maine or the two kids from school.

That's how we introduce our kids to the wonderful world of the Internet. No need for all that educational stuff and building a sense of a world community. Just give them naked ladies, Pat The Pervert and Harry The Huckster.

Don't take this as a rant against pornography or shell games. I don't care if people post sex and scams. If adults go to their Web sites, aware of what they're getting into, that's their business. I won't be a hypocrite here, so I'll even grant legitimate adult sites the same First Amendment protections that traditional media outlets have claimed.

My beef is with the "push" approach of the spammers. My kid didn't ask someone to send him a pitch for "making millions" working at home. And I know he isn't looking for photos of teenage girls — we'll wrestle with that urge soon enough.

No, that was just a bunch of trash blindly mailed to a list, and my 9-year-old happened to be on the list. (AOL spam-blocking options also block honest E-mail).

The heck with First Amendment for the pond-scum peddlers who send unsolicited filth and hustles to innocents. Let's *read* them their rights.

I'll gladly take off my journalist hat, don my parental robes and throw the book at those creatures.

Antispamming legislation just got the vote of this journalist/Dad. □

Connolly is Computerworld*'s department editor, Review Center. His Internet address is james_connolly@cw.com.*

The doomed year 2000 body-toss

Michael Schrage

As post-industrial theater of the absurd, the digital angst about Y2Kollapses and Millennia Meltdowns is fascinating. Two thumbs up! Will our systems collapse in ways that simultaneously surprise and destroy? Or, to borrow from that terrific software artist Bill Shakespeare, is this just all sound and fury that signifies nothing?

Haven't a clue. But let me share a year 2000 observation that leaves me speechless, smirking and shaking my head. One of my all-time favorite books is *The Mythical Man Month* by Fred Brooks, an innovative University of North Carolina computer science professor who oversaw the development of the IBM 360 operating system. The book is a classic — beautifully written, insightful, inciteful and brimming with the useful wisdom of practical experience. *The Mythical Man Month* is the sort of book that every manager should reread every couple of years. I do.

Perhaps the single most provocative management principle Brooks conveys in the book is that when you add people to a software project that's running late, you invariably make it even later. Let me paraphrase: You can't accelerate a difficult software development process by adding more people. Brooks' arguments and evidence are compelling. Moreover, in the 20-plus years since the book's publication, the wisdom of Brooks' principle has been empirically confirmed time and time again.

So I'm chatting with friend, colleague and fellow *Computerworld* columnist Peter Keen about the professional perversities of organizational behavior and, between us, *every single company we know* is adding people to its crash year 2000 efforts. Every one. I make a few calls and send out a dozen E-mails. Jackpot! *Every single company contacted* is either in the process of or plans to add a significant number of people to their millennium-bug-extermination processes.

If Fred Brooks were dead, he'd no doubt be spinning in his grave. I talk regularly with a couple of year 2000 managers in large companies. They know who Fred Brooks is, they've read *The Mythical Man Month* and they darn well know the book's key finding. But, hey! — they're just too busy trying to marshal as many resources as they can to satisfy themselves and their bosses that they're taking every step possible to solve the problem. It's oddly reminiscent of overworked folk who complain that they're just too busy to take the time to hire an assistant.

Given past experience, we should be able to state with almost unerring accuracy that every single organization that is adding people to "help out with" its millennium challenge will be worse off than it would be otherwise. Organizations that were guilty of underestimating their year 2000 rewrites a few years back are now guilty of mismanagement yet again.

When you add people to a late software project, you invariably make it later.

I confidently predict a spate of stories in *Computerworld* by year's end — and in *The New York Times, The Wall Street Journal* and on CNN next year — that all those programmers thrown at the millennium bug in 1997 and 1998 only made the problem worse. Professor Brooks will be quoted sounding rueful and disappointed. CIOs and year 2000 czars will find their heads swiftly removed from their shoulders.

Sad? Absolutely. Predictable? Well, it's as predictable as the year 2000 challenge itself. The problem also isn't ignorance; it's arrogance. People know what the problem will be; they simply don't believe it will happen to them.

They're wrong and, whether the problem is real or not, they'll pay a price for that arrogance. □

Schrage is a research associate at the MIT Media Lab and author of No More Teams! *His Internet address is schrage@media.mit.edu.*

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Death knell for the NC

Bill Laberis

If you blinked, you may have missed the coming and going of a wicked-huge, neat and cool new paradigm that never was. Yes, the sun is rapidly setting upon the network computer.

That is the same network computer that was on the cover of every trade magazine and business publication a short time ago. The network computer was going to be the answer to the oppressive cost of PC ownership, which pundits and network computer wags had pegged at something equivalent to the gross national product of Chile.

And for IS managers, the appeal of network computers was boosted by claims that deploying them would put managers back in control of end-user computing — control that was relinquished to PCs more than a decade ago. Applications and network access would be parceled out by IS. (For more on the network computer's fate, see this week's Special Report: Tomorrow's Desktop, beginning on page 83.)

Now it appears the network computer is destined for the junk heap of failed technologies — or at least vastly overpromised, underdelivered technologies. It's a poster child for the aphorism, "If it sounds too good to be true, it probably isn't."

The network computer is destined for the junk heap of failed technologies.

Like many, I believed network computers would find a niche (and nothing more) in environments where end users require a handful of applications and not a lot of computational work. Order takers, reservations clerks, bank tellers and so on. But even those applications and those end users probably will bypass the network computer. Why?

For one thing, the network computer no longer enjoys a price advantage over PCs. A screaming, fully loaded PC costs less than a grand. Why spend nearly the same on a diskless piece of network overhead called a network computer?

More critically, however, the network computer was designed to have very little in common with the Windows world. The Microsoft haters — led by Sun, Oracle and IBM — saw to that. Awash in hubris, they not only (correctly) saw a great market opportunity in solving the cost of ownership issue, but they (incorrectly) saw an opportunity to topple Microsoft and (stupidly) ended up handing Microsoft another superb opportunity.

Specifically, end users with limited applications and computing needs are turning in droves to Windows-based terminals, often based on the network server technology of Fort Lauderdale, Fla.-based Citrix Systems. Call it Windows Lite. That technology gives users access to the Windows applications they love through low-cost terminals or old hardware. It gives IS the administrative control it likes to have, and it means IS doesn't have to deal with Java.

That brings me to the last reason the network computer failed. Early network computers that ran Java were unreliable and slow, particularly when users tried to download software. Some vendors began adding local memory to their network computer to address that problem. Suddenly, the network computer started looking a lot like a PC.

The network computer user pioneers who had their photos plastered all over the magazines now won't even talk about network computer plans — mainly because they aren't making them any more. "Bamboozled once again," is what executives at poster-child companies such as CSX Technology and Federal Express are probably muttering.

Thus, the epitaph: "Here lies the network computer, 1995-1998. A fundamentally sound idea that tried to answer a real market need. Waylaid by the politics of greed and irresponsibility." □

Laberis was editor in chief at Computerworld *from 1986 to 1996. He is now president of Bill Laberis Associates, a consulting and publishing company in Holliston, Mass. His Internet address is bill@laberis.com.*

The government is here to stay

David Moschella

One of the great ironies of our industry is that the bigger and more powerful we get, the more dependent we become.

Before the emergence of the Internet, the computer industry pretty much did what it wanted. But now, as technology becomes evermore pervasive, reaching our goals increasingly requires that we satisfy the needs and interests of others.

We have seen this most with the so-called convergence issues. The need for more consumer bandwidth has turned giants such as Microsoft and Intel into cheerleaders for the communications industry's efforts to roll out cable modems and Asymmetric Digital Subscriber Line. Similarly, the need to make the Web more useful and entertaining has forced many industry executives to admit that content, not technology, is king.

On a negative note, the inability of the PC and TV industries to work together has largely forestalled any serious PC-TV integration.

In recent months, it's become clear that governments are a second major realm of interdependence. On a mind-boggling array of fronts, state, federal and international organizations are either intervening or being asked to intervene in the Internet's evolution.

Consider a few recent examples: Washington state just approved its own tough antispam law; Florida continues to prevent out-of-state wineries from directly shipping products to consumers; Virginia is appealing a federal decision to strike down its 2-year-old law that prevents state employees from using the Internet to view sexually explicit material; and, of course, a dozen or so states are considering taking their own actions against Microsoft.

Although it's easy to view state boundaries as increasingly archaic in a tightly wired society, try telling that to America's 50 state governments and some 30,000 local jurisdictions.

Activity at the federal level is both better known and more ambitious.

Whether the issue is encryption, privacy, universal service, taxation, gambling, pornography, free speech, libel, fraud, copyrights, digital signatures, antitrust, telecommunications reform, spectrum allocation or domain-name registration, the federal government has become part of our industry more quickly and more deeply than almost anyone imagined.

Virtually all those controversies have their counterparts at an international level. Here, the computer industry will find it even more difficult to get its way. Many countries don't see any reason to do any favors for an IT industry dominated by U.S. vendors or for a World Wide Web dominated by English-language content. Europe's stricter and more formal standards for individual privacy protection will likely emerge as an early flash point.

For better or worse, public/private cooperation is the only path forward for IT.

It's easy to sit back and suggest that governments should simply get out of the way, but that is impossible and will not happen.

Today's Internet is indeed like the Wild West. Does anyone really think that market forces alone will solve such problems as fraud, libel, privacy or spectrum allocation?

Similarly, despite its free-market inclinations, our industry has been quick to call on government intervention whenever its global interests are threatened.

For better or worse, public/private accommodation is the only path forward. Given that the computer industry likes to think in Internet years and governments often move as if on sea-turtle time, the chances of everything going smoothly are slim indeed. How our industry reacts will say much about its future. Good-faith cooperation is the price to be paid for becoming the world's most important industry. □

Moschella is an author, independent consultant and weekly columnist for Computerworld. *His Internet address is dmoschella@earthlink.net.*

Corporate Strategies

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Briefs

Some users unethical

A survey of user ethics found that 45% of respondents admitted to some unethical behavior, including shopping online while at work, sabotaging employers' computer systems or playing games while at work. Another 13% of the respondents admitted to copying software for home use.

About 1,000 workers responded to the survey, which was conducted by the American Society of Chartered Life Underwriters and Chartered Financial Consultants in Bryn Mawr, Pa., along with the Ethics Officer Association in Belmont, Mass.

Development centers

Complete Business Solutions, Inc. (CBSI) has opened an enterprise software development center in Chicago.

CBSI's development centers, also planned for Michigan, California and Ohio, will work primarily with midsize companies to configure and customize packaged enterprise systems such as SAP AG's R/3 software. CBSI is based in Farmington Hills, Mich.

Effect of computers and the Internet on the U.S. economy

- In the past five years, 7.4 million jobs have been created because of computer technology.
- The high-technology sector accounts for more than 8% of the national output of goods and services.
- The computer and communications arena are growing twice as fast as the rest of the economy.
- Investments in IT account for more than 45% of all business equipment investment, compared with 3% in the 1960s.

Source: U.S. Department of Commerce, Washington

Certification is just a start

▸ *Users struggle to keep training current*

By Tim Ouellette

EMPLOYEE TRAINING

IT STAFFERS are being tested as never before.

And not just by a heavy workload brought on by the shortage of skilled information technology workers, but also from the need to keep up to date with rapidly expanding vendor certification programs and tests.

"It is being realized as the nature of the industry," said Christianne Moretti, an analyst at International Data Corp. (IDC) in Framingham, Mass. "Now the faster pace of new technology requires that employees get trained almost on a continual basis."

But some corporate trainers question whether constantly renewing vendor-sponsored certifications is better than training in overall, vendor-neutral technology.

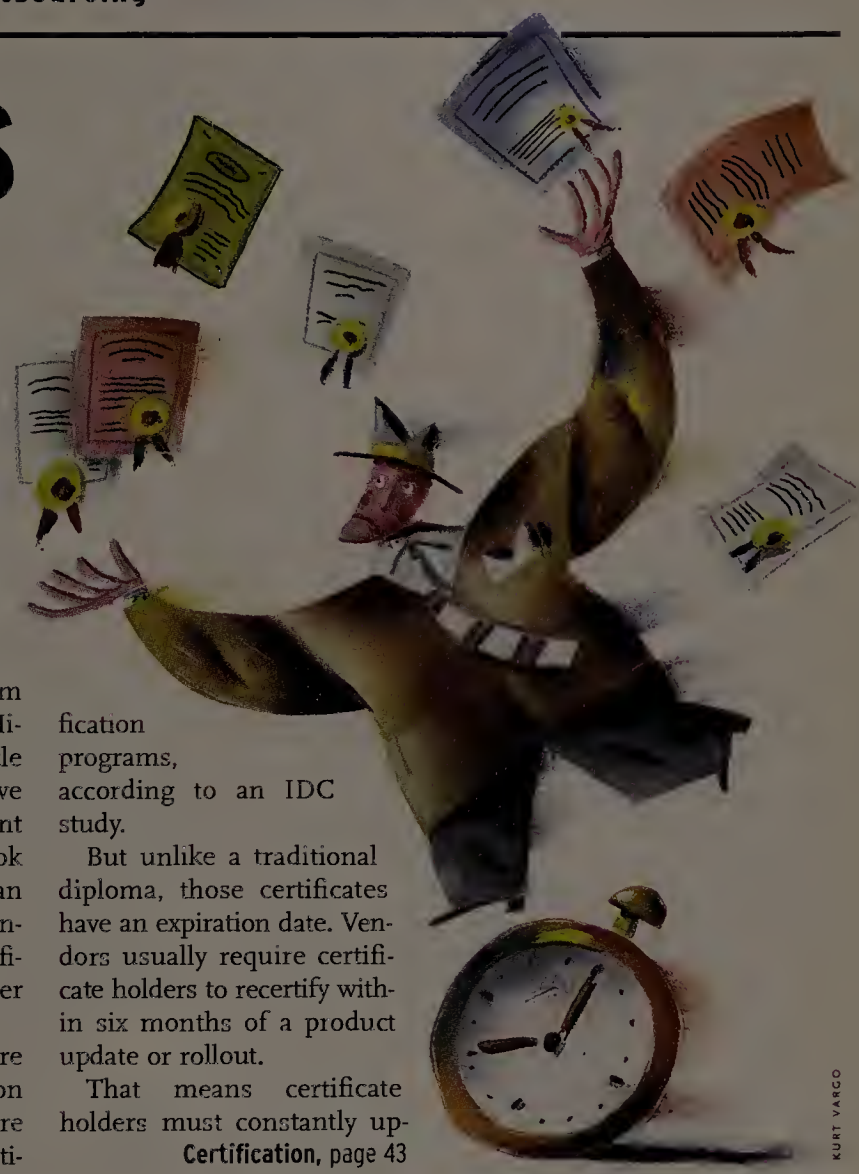
Certification programs from the likes of Novell, Inc., Microsoft Corp., Oracle Corp. and IBM have boomed in recent years as hiring managers look for any benchmark that can help them identify quality candidates. Employees with certificates also can command higher salaries.

In fact, users spent more than $1.3 billion last year on training and testing for more than 70 vendor-sponsored certification programs, according to an IDC study.

But unlike a traditional diploma, those certificates have an expiration date. Vendors usually require certificate holders to recertify within six months of a product update or rollout.

That means certificate holders must constantly up-

Certification, page 43



KURT VARGO

CUSTOMER SUPPORT

System helps dire cases in power outage

By Thomas Hoffman

THE ICE STORM that froze the Northeast U.S. and southeastern Canada and knocked out power for weeks last winter was among the worst disasters in the area's history.

But sophisticated customer information systems (CIS) helped some utilities react quickly to customers whose businesses and lives depended on continuous power.

Bangor Hydro Electric, for example, used its CIS to help identify the 3,000 or so customers who depend on electricity for dialysis and other life-support equipment, according to Shawna Giguere, Bangor Hydro's CIS project manager.

When customers called in, a lifeline indicator in the Ban-

System, page 40

Same app, different strategies

▸ *Users put custom spin on financial software*

By Craig Stedman

THE CHICAGO Mercantile Exchange (CME) and Alcone Marketing Group both were itching to replace financial systems they had outgrown with applications that would put more power in the hands of their users.

Both chose PeopleSoft, Inc.'s bundle of preconfigured applications for midsize businesses that want to be up and running in less than six months. But they took different approaches to rolling out the software.

Alcone, an Irvine, Calif., company that designs marketing and sales promotions for corporate and state lottery clients, changed the generic application templates provided by Pleasanton, Calif.-based PeopleSoft to suit its way of doing business.

But the CME, one of two big commodities markets in Chicago, altered its business processes to match the financial defini-

Application, page 43

Snapshot

Bank IT spending by source (in billions)

	1997	2002*	Change
Internal staff/training	$7.87	$11.06	+40.5%
Hardware	$6.58	$7.59	+15.3%
Systems integration	$1.64	$2.16	+31.7%
Outsourcing	$2.82	$4.17	+47.8%
Professional services	$1.41	$1.54	+9.2%
Packaged software	$3.17	$4.49	+41.6%
Total	$23.49	$31.01	+32.0%

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System pinpointed dire cases

CONTINUED FROM PAGE 37

ner CIS system from SCT Utility Systems, Inc. in Columbia, S.C., alerted customer service representatives that they were talking to an electricity-dependent customer.

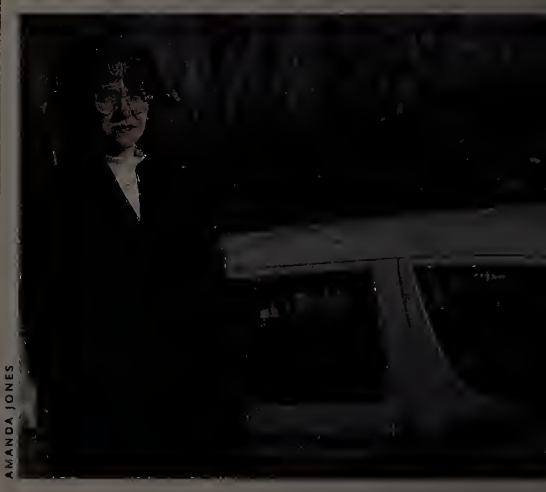
Bangor Hydro combined the system with a geographic information system to help customer representatives direct residents to the nearest emergency power locations, such as local hospitals and fire departments. Representatives also could estimate more closely when power would be restored to the customer's area.

That helped Bangor businesses, such as Osram Sylvania Products, Inc., a lightbulb-filament maker that kept production limping along on generator power during the outage.

Power went out Friday. On Monday, plant manager Graham Wark got a commitment from Bangor Hydro that the plant's power would be back Wednesday. The lights came on at 2 p.m. on the promised day.

If power had been out for even one more day, Wark said, the company would have had to begin shutting down its other lightbulb-making operations for lack of materials. Osram filaments go into 20% of the lightbulbs sold in the Western Hemisphere.

Bangor Hydro had migrated from an older IBM 4381 mainframe DOS/VSE-based system to a Digital Equipment Corp. Alpha-based system last June. Without the new system, "it would have been a very bad scene" during the ice storm, Giguere said.



AMANDA JONES

Bangor Hydro's Shawna Giguere used a customer information system to identify customers who depend on electricity

"Everyone at our company believes that if we had the old mainframe system still in place, we'd be back to writing problem tickets with a No. 2 pencil," said Giguere, who oversaw the deployment of the $7 million Banner system.

About 78,000 of Bangor Hydro's 110,000 customers were without power during the peak of its weeklong outage.

A newer, more flexible CIS would have been a big help to Green Mountain Power Corp. during the storm. Lacking one, the South Burlington, Vt.-based utility used big white marker boards in each of its seven district offices to show which circuits were down.

But it had to rely on the memories of staffers to pinpoint which circuits represented each slice of its 80,000-person customer base, said Todd Julius, software development manager at Green Mountain Power.

The utility plans to replace its 15-year-old Digital VMS-based CIS system with Banner in September. The ice storm didn't accelerate rollout of the system, but "it did make people more anxious to get it," Julius said. □

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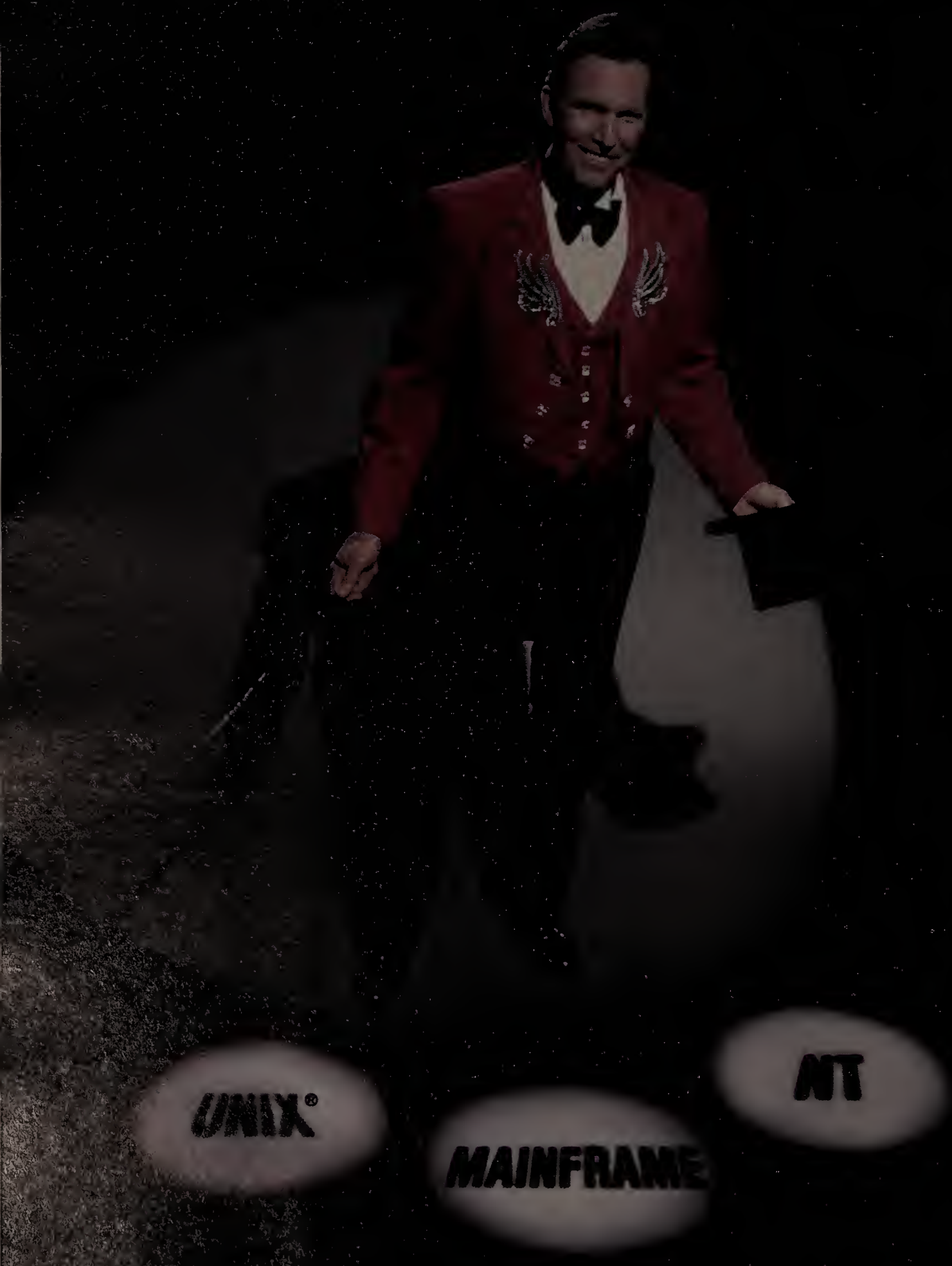

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Certification is just a start

CONTINUED FROM PAGE 37

date their ratings to keep up with a barrage of new products and updates, observers said, even though workers have less time than ever to take training courses.

For instance, Mike Orther, a Windows NT administrator at Codeline, Inc. in Escondido, Calif., took preparation classes from three vendors and multiple tests over several months to earn a Windows NT certificate. And though the manufacturing company has a small IT staff, he probably will have to update the certification whenever NT 5.0 hits the streets.

More and more companies are addressing that problem by focusing on training for new employees, leaving other employees to fund recertification efforts themselves on their own time, said KerriAnn Vogel, an analyst at Meta Group, Inc. in Stamford, Conn.

Test prices for recertification can run up to $125 each, while preparation courses range in price from a few hundred dollars to $3,000.

Still, with some workers earning a 15% premium because they hold a certificate, many workers are willing to foot the bill to get recertified [CW, March 30].

But some corporate trainers said recertification programs must be improved before workers go through the time and effort to update certificates.

"These programs are only as good as the versions of the software being used," said Doug Upchurch, executive director of the International Technology Training Association in Austin, Texas.

That's because "recertification tests are really only focused on teaching product upgrades, not on measuring a worker's overall experience and skill in that technology," Upchurch added.

That means people with no prior experience with a specific product got greatest value from certifications rather than those looking to update their skills, said Dave Murphy, a corporate trainer at an IT services firm and membership director of the International Association of Information Technology Trainers in Columbia, Md. □

Same application

CONTINUED FROM PAGE 37

tions and preset screen configurations provided by PeopleSoft.

"We wanted as plain-vanilla an implementation as possible," said Dave Dugan, vice president of systems development at the exchange. "We're trying to become a more efficient organization, and it doesn't necessarily behoove us to modify [templates] that are based on what lots of other companies are doing."

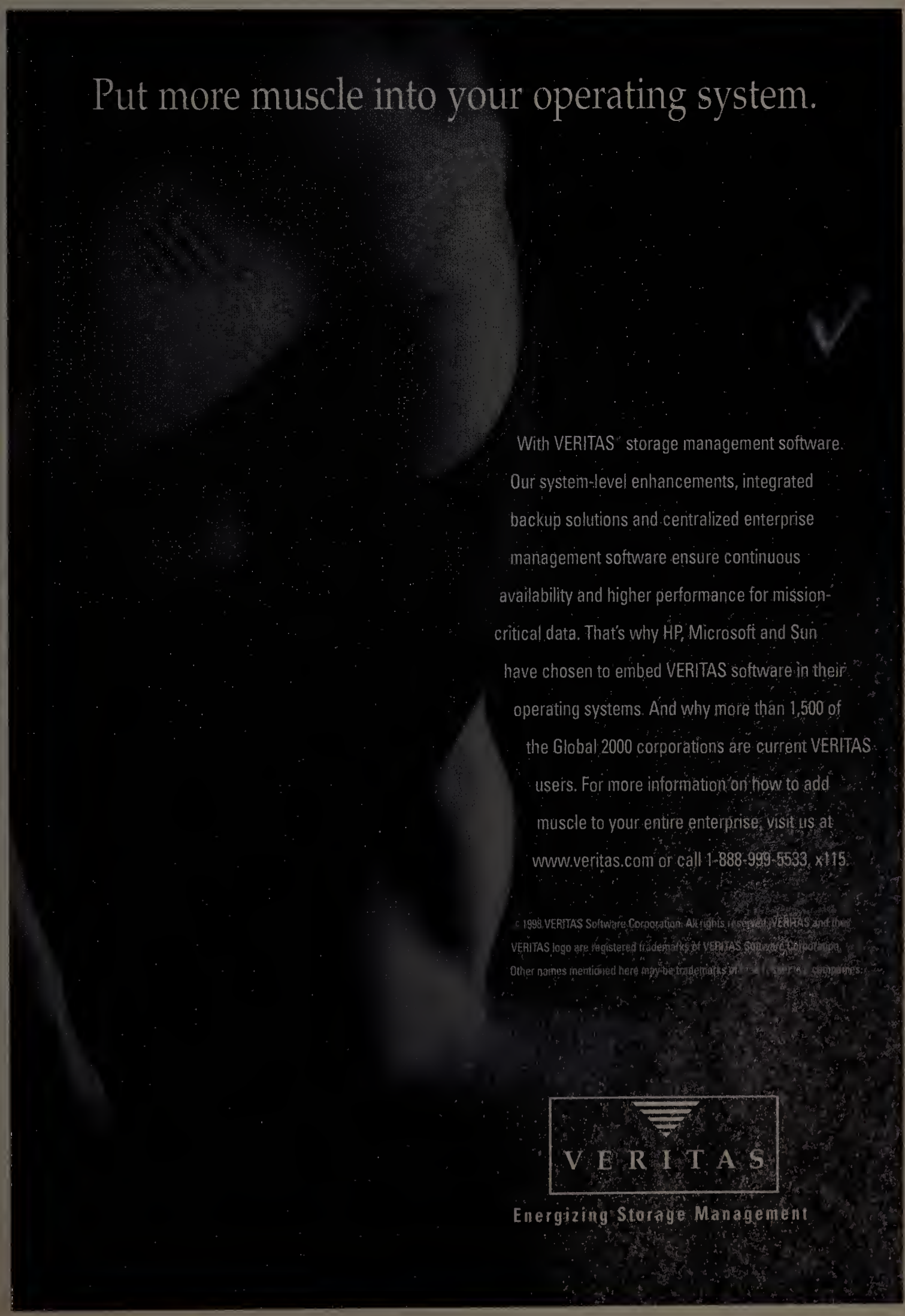
Most of the buyers of the hardware and software bundles that PeopleSoft and other vendors have put together probably do some remolding of the application settings, said Jim Shepherd, an analyst at Advanced Manufacturing Research, Inc. in Boston. But others "may decide that the preconfigured processes are better than their own and use the software as an excuse to improve the way they run their business," he said.

The CME's top financial officials bought into the idea of keeping the PeopleSoft applications as standard as possible in order to take advantage of business practices synthesized from a wide group of companies, Dugan said.

The only customization involved the design of some reports specific to the exchange, although the exchange. Internal process changes included a restructuring of the CME's general ledger accounts.

Mike Leber, chief financial officer at Alcone, said the preconfigured templates helped cut his five-month PeopleSoft implementation by as much as 50%. But Alcone jazzed up PeopleSoft's generic profit-and-loss statement to better reflect the way its users like to look at data.

"We wanted something a little fancier than the canned one," Leber said. □



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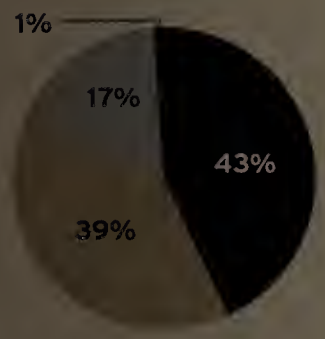
Briefs

SPAM LITE

How many spam messages do you get per week?



- 0
- 1 to 10
- More than 11
- Don't know

Base: 250 IS managers

Source: Computerworld Information Management Group, Framingham, Mass.

IRS: It's really slow

The average time required to download the Internal Revenue Service's World Wide Web home page on April 15 was 23.2 seconds, while 40 other business sites averaged 2.9 seconds on tax deadline day, said Keynote Systems, Inc. in San Mateo, Calif. The IRS site had 42 million hits from April 13 to 15, compared with 11 million hits in the same period last year. The system was slowed by high traffic but never crashed, an IRS spokesman said.

Site Server 3.0 debuts

Microsoft Corp. last week announced intranet and electronic-commerce software packages, Site Server 3.0 and Site Server 3.0 Commerce Edition. Pricing starts at $1,239 for Site Server 3.0 with five client licenses and at $4,609 for the Commerce Edition with 25 client licenses.

Banyan suite

Westboro, Mass.-based Banyan Systems, Inc. announced Banyan Intranet Messaging Suite, an enhanced version of its messaging server. It supports mail clients, including Microsoft's Outlook and Netscape Communications Corp.'s Communicator.

CPAs offer seal of integrity

▸ *Web audits encourage online transactions*

By Sharon Machlis

THE SAME FOLKS who do your taxes, examine corporate books and, yes, count votes for the Academy Awards are now auditing Web sites.

Yes, certified public accountants are examining World Wide Web sites for transaction integrity, security and policies.

ELECTRONIC COMMERCE

Businesses that signed up for the Certified Public Accountant WebTrust program hope the CPA seal of approval will make customers more likely to complete purchases on the Internet.

BUSINESS BOOST

"We've already exceeded expectations," said Christopher Swainhart, president of Resource Marketing, Inc. in Fort Thomas, Ky. "There's been at least a 50% increase in electronic-commerce transactions since we've put the seal up." The Internet service, Web hosting and advertising company posted the WebTrust seal on its site in early March.

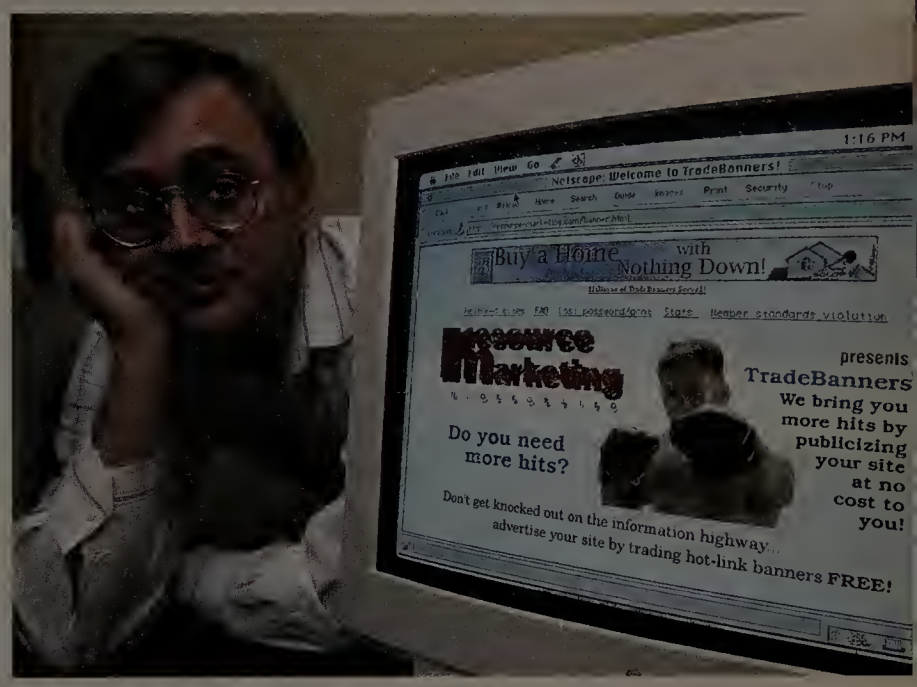
Swainhart said he can't prove that the WebTrust logo is responsible for those added transactions, but he said many visitors to his site have clicked on the seal to get more information about the program. Visitors also see authentication by a digital certificate from VeriSign, Inc. in Mountain View, Calif., meant to deter fraudulent use.

A CPA Web audit can cost $1,000 or more, depending on the size and complexity of the site. The audit checks that items ordered are actually shipped, that credit card numbers are quickly removed from servers connected to the Internet and that consumers are given information such as an order confirmation number and how to reach a live person if they have a problem.

"It was a big learning experience, I think, for the client and for ourselves," said Bob Findley, a partner at law firm Fleming Brockschmidt & Durkin in Cincinnati. Findley audited the Resource Marketing site. "You go and poke around and see where it takes you," he said.

Findley ran dummy transac-

Web site audits, page 54



Resource Marketing's Christopher Swainhart: Electronic-commerce transactions have jumped by 50% since CPA seal was posted

Caching tools boost browser speed

▸ *Devices offer speedy Web page retrieval, lower bandwidth use*

By Carol Sliwa

RAYTHEON SERVICES tried to use the caching feature in its proxy server to help users access Web pages more quickly and conserve network bandwidth, which it believes will only get more expensive in the future.

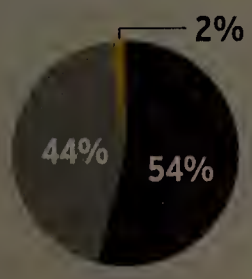
But the server didn't really help users get their World Wide Web pages any quicker, and it didn't do a good job finding previously requested pages, "so we turned off the caching feature," said Chris Nespor, a senior systems analyst at Raytheon Co.'s software development division in Landover, Md.

Raytheon Services instead turned to a hardware/software appliance from CacheFlow, Inc.

Caching tools, page 54

CACHING IN

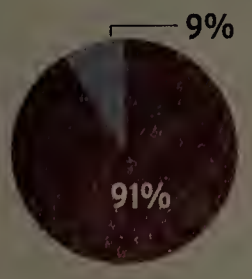
Do you cache Web pages on your own network?



- Yes
- No
- Testing
- Don't know

Base: 50 Fortune 1,000 companies

Do you expect to do so in two years?



Reasons for caching Web pages in-house:

Save bandwidth	54%
Improve response time	32%
Provide additional security	25%
Restrict employee access	14%

Base: 27 Fortune 1,000 companies that deploy network caches; multiple responses allowed

Source: Forrester Research, Inc., Cambridge, Mass.

Carrier to offer high-speed Internet access

▸ *Bell Atlantic will deploy Digital Subscriber Line*

By Matt Hamblen

IN A MOVE that should bring substantially faster Internet access closer to reality, Bell Atlantic Corp. in New York later this year plans to offer commercial Asymmetric Digital Subscriber Line (ADSL) service in two markets.

And next year, the largest of the Baby Bells expects to bring the service to Massachusetts for high-speed Internet access, said Ivan Seidenberg, Bell Atlantic's president and chief operating officer, in recent comments to the Massachusetts Software Council in Boston.

"We believe that new DSL products will present a simple solution that meets the plug-and-play test and answers the need to be online, always connected," he said.

The ADSL deployments promise to be the largest so far by any carrier, analysts said. "[This] is the bellwether year for ADSL," said Ian Gillott, an analyst at International Data Corp. in Austin, Texas. "The entry of Bell Atlantic is probably the most important" of the ADSL pilot programs, he said. The other Baby Bells and GTE

'net access, page 54

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Web site audits offer measure of E-security

CONTINUED FROM PAGE 47

tions through the system to check for integrity and encryption, and looked at things such as the Web site's user interface. Auditors at several early sites said they have found transaction and security processes in order but made suggestions on giving consumers more information.

Following its audit, Resource Marketing posted more details about its business practices, gave consumers one more chance to proofread their orders before seeing the submission button and gave customers a control number to track their orders.

The American Institute of Certified Public Accountants announced its CPA WebTrust program in September. The first audits were done this spring.

The audit checks that items ordered are actually shipped, that credit-card numbers are removed from servers connected to the 'net and that consumers are given information such as an order confirmation number.

OTHER SCHEMES

Other industry organizations, such as the nonprofit Trusted Universal Standards in Electronic Transactions, are trying to boost confidence in Internet transactions with privacy and disclosure standards, although third-party auditors don't necessarily go to a company's physical offices for reviews. And some banks and financial institutions have expressed interest in the issue.

"We will reach a point where there will be all these stamps of approval" for Web sites, said David Taylor, group vice president of applications of technology at Gartner Group, Inc. in Stamford, Conn. "I think that would help. People are looking for some sense of independence in evaluation of these things."

Many major companies, with names already trusted in the real world, report that consumers already are comfortable putting their credit-card numbers over the Internet without outside certification. And even some small sites maintain they shouldn't need an outside endorsement. "It depends whether or not the press continues to hype the security issue," said Ken Hawk, president of 1-800-Batteries in Reno Nev.

But Swainhart said outside experts can help boost Web commerce. "I like having a third party," he said. "I don't see any other solution, really, to bringing integrity and credibility to the Internet." □

Carrier to offer high-speed 'net access

CONTINUED FROM PAGE 47

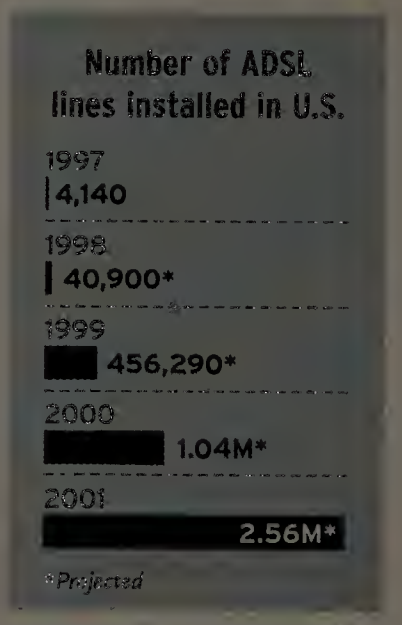
Corp. in Stamford, Conn., have announced plans to enter the market this year or next, but Bell Atlantic seems to be the most aggressive, Gillott said.

Analysts have predicted a larger consumer market for ADSL service. Bell Atlantic is testing its service in Cambridge, Mass., with 65 remote workers at Lotus Development Corp. They use ADSL for work-related Internet access.

Bell Atlantic didn't say which markets would be the first to get ADSL service.

ADSL service, as offered by early providers, offers downstream speeds of usually 1.5M bit/sec. But upstream speeds can be much less, which is one reason why network managers might consider a type of DSL with faster upstream speed, such as Symmetric DSL, to let workers send large files to one another quickly, analysts said.

Concentric Network Corp. in Cupertino, Calif., recently said it will offer Symmetric DSL in the Boston area this summer [CW, April 6]. And Covad Communications Co. in Santa Clara, Calif., recently said it will offer two or more varieties of DSL in Boston, Los Angeles, New York, Seattle and Washington.



Source: International Data Corp., Framingham, Mass.

Several network managers said they are interested in testing DSL service for remote workers to increase Internet and intranet access speeds, but some managers are concerned it won't protect against signal interference.

"I know ADSL doesn't work because of the cross-talk between trunks," said Jack Reed, network manager at Grumman Systems Support Corp. in Longmont, Colo.

But Reed said he wants to explore Ethernet DSL, or Etherloop, which allows transmission of Ethernet traffic over a dial-up connection for synchronous voice and Ethernet transmissions. Etherloop is still early in its development.

Seidenberg said he likes ADSL more as a technology of the future — despite the fact that Bell Atlantic is the nation's biggest Integrated Services Digital Network (ISDN) technology provider, with 400,000 installations. ADSL moves beyond the abilities of ISDN and its maximum 128K bit/sec. speed.

While the current ADSL test programs typically run at 1.5M bit/sec., analysts said commercial ADSL could operate at 9M bit/sec., and Seidenberg said it could reach 50M bit/sec. "ISDN isn't really the answer for tomorrow, because it's a technology that's built atop voice technology," he said. □

Caching tools boost speed

CONTINUED FROM PAGE 47

in Palo Alto, Calif., to do its caching.

Forrester Research, Inc. predicts that during the coming year, these devices will become as integrated into the network as Internet Protocol routers.

Products such as CacheFlow and Network Appliance, Inc.'s NetCache can be expected to keep cached information more current and can scale to a greater degree than can proxy servers from Microsoft Corp. and Netscape Communications Corp., according to a report from the Cambridge, Mass.-based research firm.

"These products are built from the ground up to do caching, and that's a good way to get high performance," said Forrester analyst Ted Julian. "Another advantage is ease of use. You essentially plug these things in, and they work."

AUTOMATED UPDATES

CacheFlow's appliance has its own built-in operating system. It is based on a statistical model: Adaptive algorithms help to refresh oft-requested Web page objects in the cache on an active basis. Proxy servers typically don't do updates until a user requests them.

CacheFlow also writes Web page objects directly to disk for faster performance, company officials said.

At Raytheon, a Web page that used to take a long time to load now appears "noticeably faster," and router statistics show that bandwidth usage has decreased, Nespor said.

Users at Adaptec, Inc. in Milpitas, Calif., have also noticed better response time, said Steve Hosack, a corporate telecommunications manager. The networking products firm's CacheFlow machine takes 600,000 hits per day from about 3,000 Adaptec employees.

The proxy server the company had been using was being driven to about 90% of capacity, he said. The CacheFlow machine, which replaced it for caching, is at 12%, Hosack said. "The performance of servers tends to dip as they become busier," he said.

CacheFlow comes in two models: CacheFlow 1000 for heavy traffic, and CacheFlow 100, announced last week, for low to moderate traffic.

CacheFlow 100 costs $8,900. Pricing for CacheFlow 1000 ranges from $39,500 for a device with 8G bytes of disk storage to $47,700 for 25G bytes of disk storage.

Nespor said he hadn't quantified the savings from CacheFlow but expected it to pay off in the long term.

"We knew it would be prudent to start looking into alternative technologies now [because] bandwidth will start to get more expensive in the future," Nespor said.

Adaptec, which uses CacheFlow 1000 in its California office, plans to test CacheFlow 100 at its 80-person Tokyo office. Japan-based users' initial Web page requests will be directed to Milpitas, but any subsequent requests for that page will go to the Tokyo-based CacheFlow 100, which will have the information on disk.

"Without the CacheFlow machine in Japan, there would be several queries across the wide-area network to the cache machine here," Hosack said. "Now the first request will result in a fetch, but all subsequent requests would not put a strain on the network because they'll be cached locally." □

Snapshot

Top 10 networked counties in the U.S.
Internet host computers per 1,000 people

County	'net hosts/1,000 people
1 San Mateo, Calif.	431
2 Santa Clara, Calif.	399
3 Fairfax, Va.	343
4 Washtenaw, Mich.	325
5 St. Louis, Mo.	225
6 Middlesex, Mass.	171
7 Travis, Texas	167
8 San Francisco, Calif.	160
9 Hennepin, Minn.	145
10 Fulton, Ga.	143

Source: Matrix Information and Directory Services, Inc., Austin, Texas

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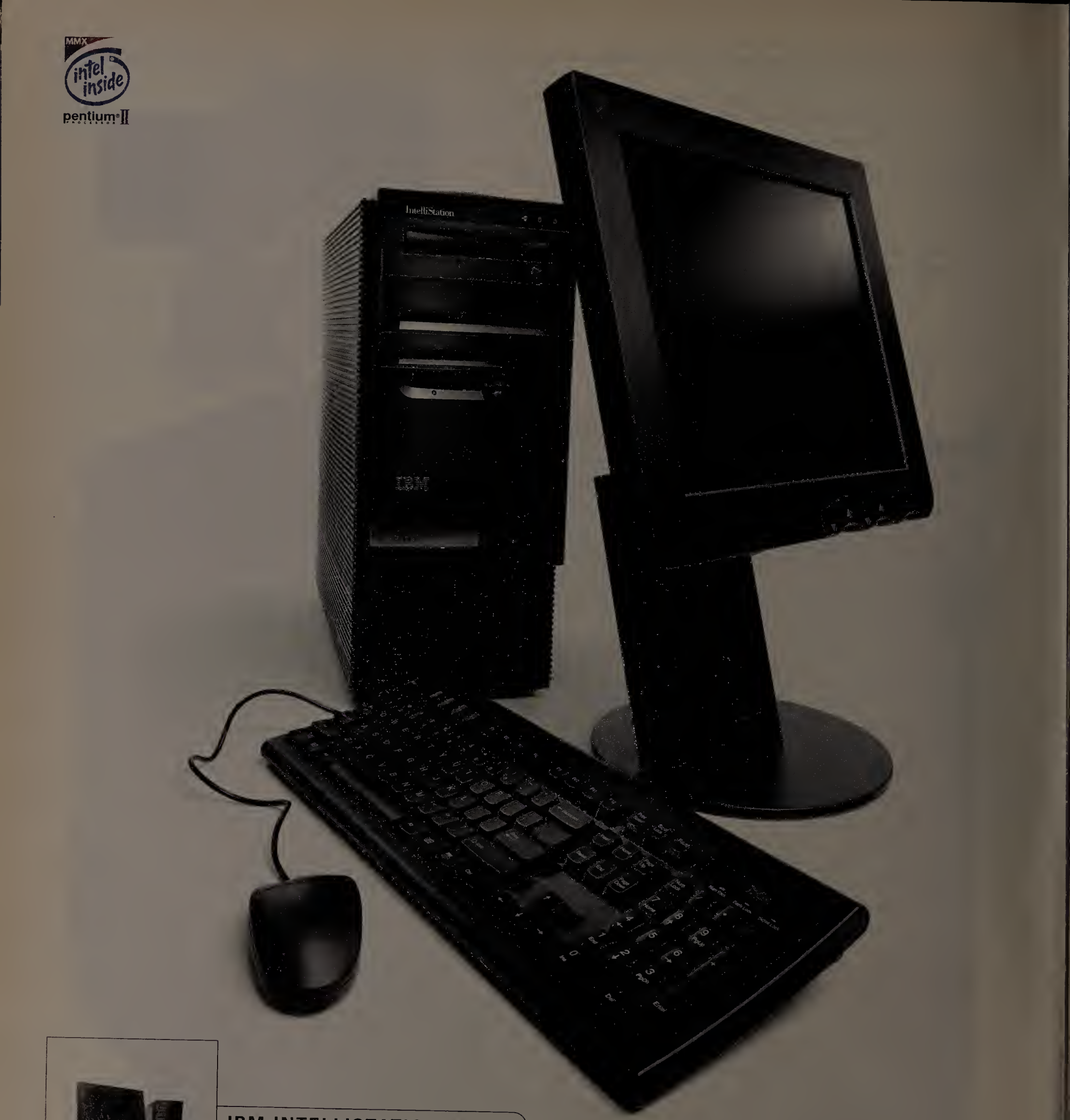

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May vary due to componentry and manufacturing variances. [2]5 pounds is traveling weight. With CD-ROM drive, battery and hard drive, weight is about 5.5 pounds. Actual weight may vary. [3]MHz denotes microprocessor internal clock speed only; other factors may also affect application performance. [4]Estimated reseller price to end users for model 264531U (ThinkPad 600 Series), 686218U (IBM PC 300PL), 689810U (IntelliStation M Pro), 9514B23 (14-inch Flat Panel Monitor), and 847610U (Netfinity 3000 Server); certain features described above are available for an additional charge. Actual reseller prices may vary. All PCs referenced in this ad include an operating system. IBM product names are trademarks of International Business Machines Corporation. Microsoft, Windows and Windows NT are registered trademarks of Microsoft Corporation. Lotus, Domino and Domino Intranet Starter Pack are trademarks of Lotus Development Corporation. Intel Inside and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. © 1998 IBM Corp. All rights reserved.

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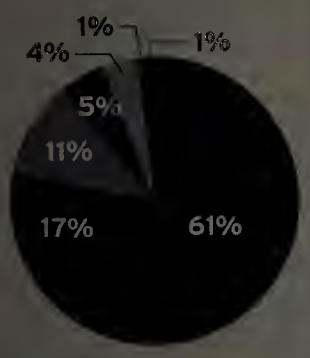
Briefs

Client/server budget breakdown



- User productivity and revenue loss (due to downtime)
- User support
- Desktop hardware/software
- Back-end hardware/software
- User training
- Administration
- Other

Source: Creative Networks, Inc., Palo Alto, Calif.

Wireless LAN

Lucent Technologies has announced the WaveLan system, a wireless LAN that complies with the ratified IEEE standard. It is targeted at factories, warehouses and retail environments and provides an indoor range of up to 1,200 feet. The WaveLan PC Card for laptops, portable devices and handhelds costs $495 and is available now. An Industry Standard Architecture card for desktops is available for $545.

LDAP 3 support

Reston, Va.-based ICL this month will ship a version of its i500 directory server that now supports Version 3 of the Lightweight Directory Access Protocol (LDAP). LDAP Version 3 provides more security than previous versions. The server costs $2,995.

Security device

Start-up NetScreen Technologies, Inc. in Santa Clara, Calif., last week began shipping the NetScreen-10, a secure packet processor that provides businesses with firewall, virtual private network and traffic management functionality on one device. Pricing for the NetScreen-10 is $3,995.

Interest renewed in Novell apps

▸ *Many see benefits of NetWare over NT; more products available*

By Laura DiDio

IT STARTED OUT as pure marketing kitsch. Write the best application for NetWare and Novell Directory Services (NDS) and win a Harley-Davidson motorcycle.

Seven months and 250-plus entries later, Novell, Inc. has awarded a prize in the "Get Off Your Apps" contest to NetVision, Inc. in Orem, Utah, for its Synchronicity. The product synchronizes user information in NetWare with directories in Notes and Windows NT machines.

During the past few years, Microsoft Corp.'s Windows NT has stolen the loyalties of many independent software developers to the point that users looking for a key application sometimes can't find a version that runs on NetWare, said George Hoffman, technology services manager at Penobscot Bay Medical Center in Rockland, Maine.

The hospital picked a specialized medical application from Hewlett-Packard Co., but it runs only on NT. "We have no choice. If Novell wants to compete against NT, they must do a better job of getting [independent software vendors] to write for NetWare," Hoffman said.

STEVE BORNS

The Guggenheim's Leonard Steinbach says he predicted NetWare's growth

But observers said the number of contest entries is indicative of a growing body of products that use NetWare services such as NDS rather than just run on the server.

"I predicted this would happen a year ago. Now people realize that NetWare is a solid, secure operating system that's here for the long haul," said Leonard Steinbach, director of information technology at the Solomon R. Guggenheim Museum in New York.

NetWare apps, page 64

Users opt for simpler management

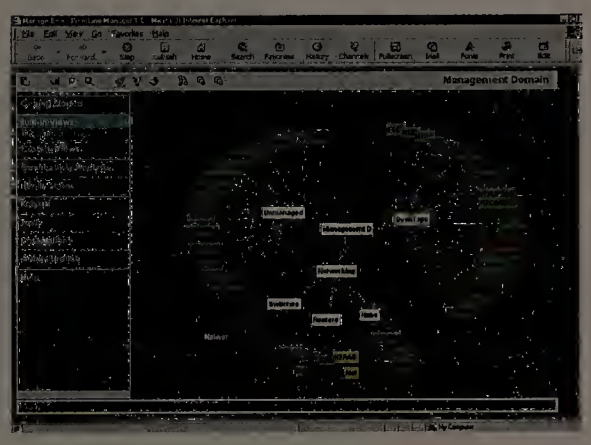
▸ *Simpler tool kits seek to speed troubleshooting*

By Patrick Dryden

LIKE EMERGENCY-ROOM medics, frontline IS staffers must quickly sort through many different ailments to treat the most threatening ones first.

Now more management-software vendors are offering simplified suites designed for information systems managers who maintain small businesses, baby-sit the branch offices of corporations or handle calls to a central help desk.

The overriding needs in each case are the same, said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo. Tools must work without requiring the operator to attend class for a week, write scripts or figure out what to do next, he said.



Manage.Com's Frontline Manager tries to speed diagnosis of common problems in networks, servers and services for managers who run a small business or a branch office

"Frontline guys don't have time to screw around with a tool, and not everyone is a tech weenie," McConnell said. Therefore, products must explain situations involving networks, servers and essential services and describe how to take action, he said.

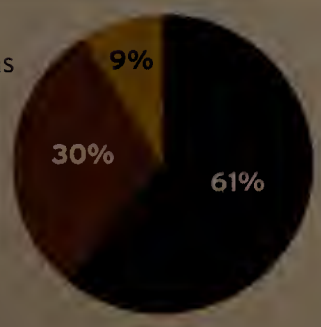
Small-business IS groups need such tools because "they are run ragged from dealing with a mix of technologies with-

Simpler management, page 64

Price, capacity turn users away from Token Ring

ONLY TOKEN USE

What is your current strategy for supporting Token Ring connections across your backbone?



- Being phased out*
- Upgrading**
- Other/no change

Base: 200 Token Ring users

** Replacing with Ethernet, ATM or FDDI switching*

*** Upgrading Token Ring alone or with a combination of Ethernet, ATM or FDDI*

Source: International Data Corp., Framingham, Mass.

By Bob Wallace

Q: WHY ARE users leaving Token Ring for Ethernet?

A: Token Ring turned out to be its own worst enemy.

That's the conclusion of a survey of 200 Token Ring users conducted by International Data Corp., a research and consulting company in Framingham, Mass. The survey showed that 53.5% are migrating toward Ethernet for desktop and server

Token Ring, page 66

NETWORLD/INTEROP

Faster, cheaper items on tap

By Bob Wallace

LAYER 3 SWITCHES are expected to headline at this week's Networld/Interop '98 conference in Las Vegas, while virtual private networks are expected to be the warm-up act.

Layer 3 switches can replace some routers, which are slower and more expensive.

Vendors pitch virtual networks as less expensive alternatives to private data networks and remote access systems.

SHOWCASE PRODUCTS

The following products will be featured at the show:

Switching leader Cisco Systems, Inc. in San Jose. Calif., will demonstrate for the first time the Catalyst 8500 family of switches.

The five-slot 8510 has 32 10M/100M bit/sec. ports. up to four Gigabit Ethernet ports and can handle 6 million packet/sec. The 13-slot 8540 has 128 10M/100M bit/sec. ports, up to 16 Gigabit Ethernet ports and can handle 24 million packet /sec.

The price for a Layer 3 switch port ranges from $700 to $2,000, depending on the switch configuration.

Both switches route IP and IPX protocols.

Networld/Interop '98, page 64

NetWare apps increase

CONTINUED FROM PAGE 63

The Guggenheim uses several NDS-based applications to cut administration time by almost a third and to enhance communications with the museum's new location in Bilbao, Spain.

Scott Webster, MIS manager at Canadian Occidental Petroleum Ltd. in Calgary, Alberta, uses a combination of NetVision's Synchronicity and Novell's NDS for NT to integrate all its Windows NT Server domains and Notes account information.

STEVE BORNS

Phoenix Home Life's Mike Kearney says Novell's year-long effort to improve relations with independent developers is paying off

UNIFIED MANAGEMENT

"Synchronicity lets us unify management of our Windows NT application servers under the NDS umbrella. This is an incredibly valuable application resource because we have 3,000 users in 40 different sites worldwide, and only three or four sites have resident network administrators," he said.

Webster said he has been able to find third-party NetWare applications fairly easily. The exception, he said, has been Internet tools for the NetWare environment. "Now we're starting to see that change," he said.

Still, there's no doubt that for the time being, the momentum in terms of development efforts belongs to Windows NT. And all the users interviewed by *Computerworld* acknowledged the plethora of applications available for their NT application servers.

Mike Kearney, vice president of IT engineering at Phoenix Home Life Insurance Co. in East Hartford, Conn., said Novell's year-long effort to improve relations with independent developers is paying off for users, as the number of applications that use NDS increases.

Other factors also are prompting independent software vendors and others to say, "Let's take another look at NetWare" as a development platform, Kearney said. Those factors include Novell's release of the developer tool kit — which consolidates multiple development tools into one — at its Brainshare conference in March, as well as the release of Novell tools such as ZENWorks, an NDS-enabled desktop management suite.

"So far, NetWare 5 Beta 3 and the ZENWorks beta look great," Kearney said.

Rich Ingram, network administrator at Turck, Inc. in Minneapolis, a supplier for the automotive and manufacturing industries, said he wants applications that use NDS because they save time.

"We're driven by technology that can solve our problems right now. And NDS, NetWare 5 and the applications do that. The combination cuts at least 15 hours out of my workweek," Ingram said. □

Simpler management tools

CONTINUED FROM PAGE 63

out a deep staff of experts," said Keith Nelson, management practice leader at integrator Total Solutions Group in Minneapolis.

For example, one small company was "paying consulting wages for someone to come in three days a week, check the problem log and visit individual users to find out what caused them grief," Nelson said.

Two days after beta-testing Tivoli Systems, Inc.'s IT Director, that customer could take inventory and remotely control PCs for the first time, Nelson said. That saved the small IS group the cost of outside help and the need to find another staffer to handle problems, he said.

At Metawave Communications Corp., IS operations manager Lori Stonecipher said she does daily troubleshooting with her team as it struggles to keep up with 200 users. That's because engineers who run 100 extra PCs keep duplicating IP addresses and turning on "rogue protocols" while developing mobile communication software at the Redmond, Wash., company.

Fluke Corp.'s Network Inspector helped trace those problems quickly so other users could still access the network, Stonecipher said. Unlike the team's other tools, "you don't have to go to school to get something out of this," she said.

THE SAME ISSUES

Enterprise IS shops' departments and remote sites may face the same needs as small businesses, according to Tom Reinsel, managing partner at Pepperweed Consulting LLC in Indianapolis. Support teams in those locations may be cut off from tools in the network operations center yet must respond to local users.

After beta-testing Manage.Com, Inc.'s Frontline Manager, Reinsel said the suite can help far-flung supporters "do the majority of their work without having to drill too deep." By deploying simple suites to remote managers, central IS can "derail renegade purchases by local managers," he said. □

Networld/Interop '98

CONTINUED FROM PAGE 63

Pricing for the Catalyst 8510, which will ship next month, will start at $24,995.

The Catalyst 8510 cards can be used to boost the routing capabilities of Cisco's Catalyst 5500 LAN switches.

Cisco didn't give pricing for the 8540, which will ship in September.

Start-up **Packet Engines, Inc.** in Spokane, Wash., will showcase two Layer 3 switches that it announced last week.

The PowerRail 2200 supports 100 10M/100M bit/sec. ports or up to 10 Gigabit Ethernet ports. The smaller PowerRail 1000 supports 20 10M/100M bit/sec. ports and two Gigabit Ethernet ports.

The PowerRail switches can handle 37 million packet/sec. and support IP and IPX protocols. The systems also can be equipped with Asynchronous Transfer Mode and Synchronous Optical Network wide-area interfaces.

The two PowerRail switches will ship in the third quarter, with prices starting at $225 per 10M/100M bit/sec. port and $1,750 per Gigabit Ethernet port.

NETWORLD+INTEROP98 www.interop.com

Bay Networks, Inc. in Santa Clara, Calif. will announce products in the Layer 3 switch and virtual network categories.

The vendor will unveil a low-end Layer 3 switch, called the Accelar 1050, which has 16 10M/100M bit/sec. ports and one Gigabit Ethernet port.

Bay also will announce 10M/100M bit/sec. switching modules for its high-end Systems 5000 and Centillion switches, as well as low-cost Token Ring switch offerings.

On the virtual net front, Bay will announce the Extranet Access Switch 1000, which can be used to build virtual nets. Pricing and availability for those products were not available.

Virtual network heavy hitter **VPNet Technologies, Inc.** will display VPNywhere, a family of virtual network hardware, software and service packages that was announced recently.

San Jose, Calif.-based VPNet said the lowest-end VPNywhere system can support 25 remote users from one site for $3,995

The highest-end package can support 2,400 remote users from up to four sites for $38,995.

All packages will ship next month. □

NEW PRODUCTS

ATTACHMATE CORP. has announced HostView Server Version 2.0, host access software with virtual private network functionality.

According to the Bellevue, Wash., company, the software was designed to ease the security barriers to deploying a Web-to-host access system outside a corporate firewall.

The price is $65 per client and $1,995 per server.

Attachmate
(425) 644-4010
www.attachmate.com

GIGANET INC. has announced the Cluster LAN GNN 1000 and GNX 5000, a host adapter and switch for interconnecting clusters of NT servers and disks.

According to the Concord, Maine, company, the interconnects support the Virtual Interface Architecture V. 1.0 specification and minimizes CPU overhead by letting applications bypass the operating system and directly access a network. The adapter costs $795; the switch is $6,250.

GigaNet
(978) 461-0402
www.giga-net.com

Tools of the trade

Several companies have new management suites aimed at help desks and teams serving small businesses.

■Fluke Corp. in Everett, Wash., a company known for its handheld cable testers, launched its first software product last week.

Network Inspector locates and analyzes TCP/IP, IPX and NetBIOS servers, clients, switches, routers and printers in an Ethernet network. Pricing starts at $695 for one console that monitors up to 100 devices.

■Start-up Manage.Com, Inc. in Santa Clara, Calif., has introduced a suite that monitors and diagnoses any device on an intranet via Java agents and Simple Network Management Protocol data.

Frontline Manager should ship by June. It starts at $2,995 to handle up to 255 devices. (See photo, previous page.)

■Tivoli Systems, Inc. in Austin, Texas, has plucked key management processes from its enterprise-scale framework to build a suite focused on managing a network of 200 to 600 users.

IT Director tries to provide more than discovery, alerts and diagnosis through automated routines and application-oriented policies that are more familiar to big IS shops with a mainframe heritage. Scheduled to ship by August, the suite will start at $9,000, plus $10,000 for every 100 managed PCs. — Patrick Dryden

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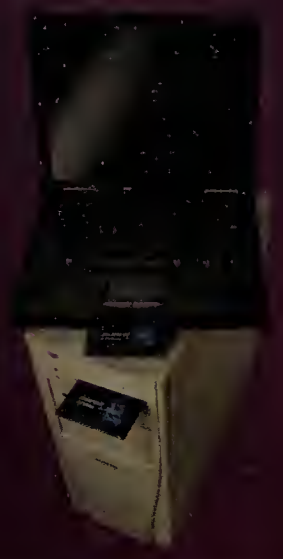

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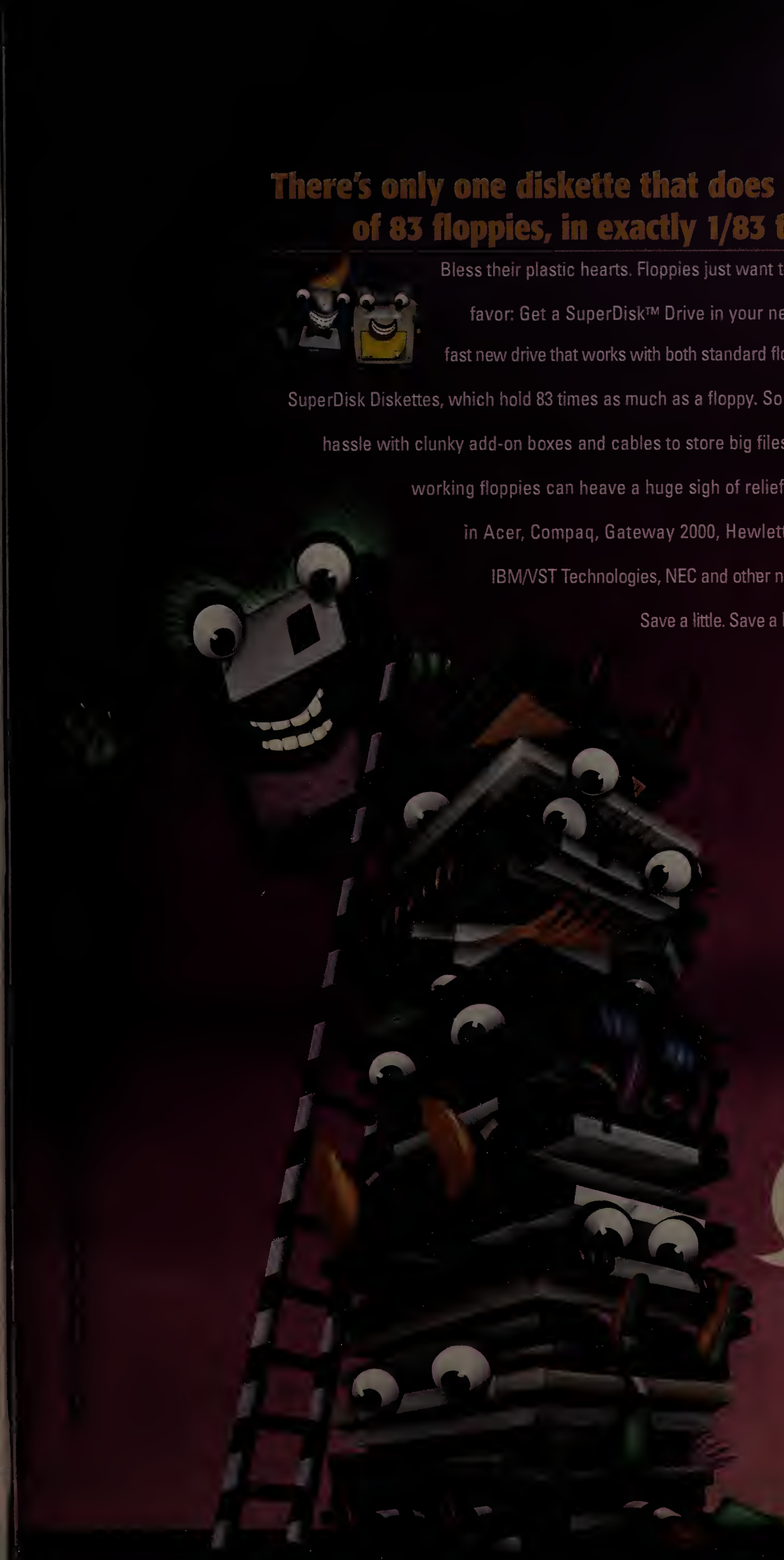

IMATION

Turning away Token Ring

CONTINUED FROM PAGE 63

connections [CW, April 20].

Ironically, the fact that Token Ring had more bandwidth and predictable performance than rival Ethernet contributed to its decline, users said.

Ethernet users ran out of LAN capacity first. And where Ethernet let users share only 10M bit/sec. of maximum throughput, Token Ring provided 16M bit/sec. of throughput. But vendors reacted to user complaints by creating Ethernet technology extensions, such as Ethernet switching and Fast Ethernet, that pushed Ethernet's capacity past Token Ring's. Then they dropped prices.

Ethernet switching lets each user have a full 10M bit/sec. throughput instead of sharing 10M bit/sec. And at 100M bit/sec., switched Fast Ethernet gives users about eight times more capacity for backbone networks.

In response to the Ethernet advances, a few start-ups began pitching Token Ring switching with 16M bit/sec. throughput per user, but users considered it to be like most Token Ring products: too expensive.

Pricing was the top reason Household International, Inc. decided to leave Token Ring. The company once had more than 5,000 Token Ring nodes and no Ethernet nodes.

The high pricing "made it ludicrous to look in any direction other than Ethernet switching to the desktop," said Chaundra Elgin, a senior consultant at Prospect Heights, Ill.-based Household International, which owns consumer finance firm Household Finance Corp.

"Ethernet adapter cards were $100 each, while Token Ring units were $400 to $500 apiece" a few years ago, Elgin said. "And I could get Ethernet switching for [about] $100 per port, while Token Ring switching would have cost me over $1,000 per port. You don't have to be a rocket scientist to see the cost benefit."

COST INCENTIVE

The price gap still exists, said Dennis Mitchell, vice president of trading services at BankAmerica Corp. in Concord, Calif. "PC vendors are building in Ethernet cards free, while Token Ring cards cost $175 each," he said. "When you multiply $175 times 1,000 PCs, you're talking about a fair amount of money."

The bank has a large installed Token Ring base but prefers Ethernet for its newer trading floors.

Many users such as Mike Wilkinson are choosing switched Ethernet over Token Ring for new networks. "We estimated that Ethernet switching would be half as expensive as shared Token Ring, which meant we could save money while getting more bandwidth," said Wilkinson, manager of information services at Mitsubishi Motor Manufacturing of America, Inc. in Normal, Ill.

The facility uses Token Ring in its administrative offices but chose switched Ethernet for a plant floor network.

Although many users have moved or are moving away from Token Ring, the LAN technology is often preferable to switching, according to Tom Nolle, president of CIMI Corp., a Voorhees, N.J., consultancy.

"There's still a large number of mission-critical applications such as reservations and call centers on Token Ring, most of which aren't highly bandwidth-consumptive," he said. "For them, 16M bit/sec. is more than adequate bandwidth." □

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Ralph Nader and the SPA debate proposed software license law. Opinion, page 33
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* Mergers cause major headaches for IS, end users
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Year 2000 glitches may be everywhere
* Phone infrastructure, medical devices at risk
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Joe Dunne, President, Cultor Food Science, Inc.

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Software

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Briefs

What do you think of knowledge management?

- Just a fad
- A new spin on old technologies
- A valuable way to organize corporate information
- A strategic imperative for staying competitive

Based on 370 IT and business managers
Source: Delphi Consulting Group, Inc., Boston

Central virus package

Dr. Solomon Software, Inc. in Burlington, Mass., has released Management Edition 3.5, which allows companies to install, manage and update their Dr. Solomon antivirus software from a single, central location. New features include the ability to remotely install and configure Windows 3.1 machines. The package lists for $599.

Citrix record quarter

Citrix Systems, Inc. has reported record results for its quarter ended March 31. Net revenue was $49.3 million, up 129% from $21.5 million for the same quarter last year. Net income was $16 million, or 36 cents per share, compared with $7.5 million, or 18 cents per share, in the same period last year.

So does Iona

Iona Technologies, Inc. in Dublin announced record revenue of $17.6 million for its first quarter of 1998. That compares with $9.1 million for the same quarter in 1997, a 93% increase. Iona also reported a net income of $2 million, or 10 cents per share, compared with $1.4 million, or 8 cents per share, in the first quarter last year. Iona makes Orbix, a component architecture.

Web app eases custom sales

▸ McGraw-Hill picks browser-based platform to replace DOS-based systems after acquisition

By Kim Girard

JIMMY BARTLETT, regional sales manager at The McGraw-Hill Cos.' higher education division, could probably teach you a thing or two about the wrong way to automate a sales force.

Bartlett, who has spent the past year looking at a dozen sales force automation software packages, has helped install several systems in his day.

"I've seen reps not use a system," said Bartlett, who is managing the Burr, Ill.-based publisher's sales force automation project. "I've seen reps use a system that didn't have enough payback."

Now Bartlett is banking on what some companies might consider a risky venture: building a World Wide Web-based customer management system that promises to make selling scholastic textbooks easier for about 300 McGraw-Hill campus sales representatives.

Although somewhat new and untested, the Web-based systems were designed to give companies an open, browser-based platform that requires minimal user training, said consultant Barton Goldenberg, president of Information Systems Management, Inc. in Bethesda, Md.

But the Web might have its limits for a company in which users download pictures, large files or complicated price sheets when making a sale, he said. "The Web isn't the most efficient way to get that through," Goldenberg said.

But because McGraw-Hill acquired The Times Mirror Co.'s higher education publishing division in 1996, Bartlett said the company decided a Web-based system would be the best way to integrate two DOS-based systems that were fragmented and built by each company.

McGraw-Hill will likely ink a deal to install Sales Vision, Inc.'s Customer Cafe because Sales Vision already has a Java product ready to go. Other vendors, including Aurum Software Corp. — a subsidiary of The Baan Co. — and Firstwave Technologies, Inc., are promising their own Web-based offerings by summer.

McGraw-Hill needed a system designed around a course schedule rather than a customer. The schedule drives sales. To get a book listed on a

Web sales application, page 70

Should you consider Web-based sales software?

Pros

- Screens designed for a browser instead of Windows, Unix or DOS
- No need for client installations or updates
- Seamless access to the Web
- Easier to use, low administration

Cons

- Initial investment can cost more
- Must deal with Web security issues
- New technology; Java's future uncertain

Finding the knowledge you need

By Barb Cole-Gomolski

SEARCH ENGINES

FINDING THE RIGHT information is what knowledge management applications are all about. So it seems fitting that some companies make text-search software the core of their knowledge management systems.

Pharmaceutical giant Glaxo Wellcome Co. in London recently was looking for knowledge management software. So it tapped search software veteran Verity, Inc. to provide a common search system that could cull information from the World Wide Web, text and relational databases, messaging systems and document management applications.

Glaxo plans to push data — such as information about regulatory compliance and drug development — to individuals and workgroups based on user profiles.

That will improve efficiency by allowing employees to access informtion without having to know where the information resides, said Peter Blundred, technical project coordinator and manager of the text systems group at Glaxo.

Verity and its main rival, the Fulcrum division of PC Docs, Inc. in Burlington, Mass., are expanding their products to better address the knowledge management space.

Knowledge management often takes the form of specialized groupware designed to harness corporate know-how to increase revenue, cut costs or shorten product development cycles.

NOTES CHOICE

Lotus Development Corp.'s Notes, for example, has been a popular knowledge management platform because it can be easily customized.

There also has been a spate of stand-alone knowledge management applications announced during the past year.

Sunnyvale, Calif.-based Verity recently announced the K2 Toolkit, which divides large queries across a network of fault-tolerant servers for improved reliability and scalability.

The K2 software is the basis of a massive online application that will let *Financial Times of*

Finding knowledge, page 70

SEARCHING FOR KNOWLEDGE MANAGEMENT

How some companies and agencies are using text-search software as the basis for their knowledge management systems

Company/agency	Project
Ernst & Young	Project management and best practices
Glaxo Wellcome	Companywide knowledge retrieval system
The White House	Daily briefing system
Financial Times	Searchable archive of millions of documents

CONVERSIONS

Year 2000 fix sparks leap to client/server

By Sharon Gaudin

THE STATE OF North Carolina took a year 2000 problem and used it as a chance to turn a mainframe-based financial application into a more efficient and productive Internet application.

The Department of Public Instruction decided that instead of just going in and fixing the year 2000 problem on the financial system used by every school in the state's 100 counties, it would make the leap to a client/server system.

Information systems managers there said users' productivity has increased, the need for IS maintenance has been lowered, and mainframe usage fees have been eliminated.

"Either way, we were going to spend the money," said Mike Muirhead, director of administrative applications division for the Department of Public In-

Year 2000 fix, page 70

Association denies Microsoft

By Patrick Thibodeau

FELLOW SOFTWARE makers have nixed Microsoft Corp.'s bid to win a seat on the Software Publishers Association's (SPA) board of directors, based on election results released last week.

Microsoft, which has been at odds with the SPA's stance on software industry competitiveness, proposed that Robert Herbold, the company's executive vice president and chief operating officer, fill one of six open board seats.

Eleven software executives campaigned for a half-dozen vacancies.

Microsoft previously had been on the SPA board but didn't run a candidate last year. The Redmond, Wash., company, which has charged the SPA with running "an all-out, anti-Microsoft campaign," decided to run for a spot in this year's election.

STILL A CHANCE

The SPA didn't release the election tally but said 700 members were eligible to vote.

Microsoft, however, still has a shot to gain a seat: The SPA board will meet May 15 to pick members to fill two board posts that are appointed rather than elected. The board "could choose from among the candidates who lost, or anyone else, and I'm sure that will be a lively debate," said Ken Wasch, SPA's president.

Re-elected to another term were Kathy Hurley, vice president at The Learning Company School, and Cheryl Vedoe, president and CEO of Tenth Planet Explorations, Inc.

First-time winners included Ron Verni, president of Peachtree Software; Ted Johnson, executive vice president at Visio Corp.; Larry Gross, senior vice president at Cendant Software; and Joel Ronning, president and CEO of Digital River, Inc.

Besides Herbold and the winners, the candidates included Daniel Burton, vice president of government relations at Novell, Inc.; Ronald Fortune, president and CEO of Computer Curriculum Corp.; Richard Hornstein, vice president of legal affairs and corporate development at Network Associates, Inc.; and Eric Ruff, president and CEO of PowerQuest Corp.

Microsoft officials weren't immediately available for comment. □

Fix for year 2000

CONTINUED FROM PAGE 69

struction, though he declined to say how much. "With about the same amount of money, we could give our users a better system or we could give them back a fix of what they had before."

The state decided to test this theory on a relatively small but critical application that's used to budget and track spending. The application was written in Cobol for the mainframe system.

The new system, which runs on Windows NT and SQL servers and shoots across the Internet using straight Hypertext Markup Language code, will eventually be home to several converted applications. The department's IS managers weren't sure what applications would follow, but they called the financial application a successful test case.

"If you're going to spend that money, you want something new to show for it," said Ray Allen, CEO of CII Associates, Inc., a Raleigh, N.C.-based consulting firm that handled the project for the state. "Migrating to a new platform was a real business decision."

Allen noted that the new application allows users to do many of their own queries and analyses, as well as shows them charts and graphs of information about multiple schools — much different than the one line of information they could see before.

The challenge was to switch all of that Cobol code over to C++. Rewriting it would have meant several man-years. And that kind of time just wasn't in the cards.

So CII used a conversion tool from Durham, N.C.-based Relativity Technologies, Inc.. The tool, RescueWare, takes Cobol code and automatically turns it into C++, Visual Basic or Java code.

Vivek Wadhwa, founder and CEO of Relativity, said the developer looks at the different pieces of the system and marks what needs to be changed and what language it should be changed to. The tool does the conversion.

"We wouldn't have done this project if we hadn't had this tool. It wouldn't have been worth it."
– Ray Allen, CII Associates

"Without this tool, we would have had to do it manually, line by line," Allen said. "We wouldn't have done this project if we hadn't had this tool. It just wouldn't have been worth it."

Muirhead said the tool made the project possible, but it wasn't a seamless transition.

"Maybe we weren't aware of what we were getting involved in," he said. "It wasn't a matter of them taking it and coming back with a new product. There were a lot of questions and decision making. The second time around we'll have a much better idea of what [the consultants and developers] need from us."

But Muirhead said his users across the state have a better system now, and his IS workers receive fewer calls from them. □

Web sales application

CONTINUED FROM PAGE 69

syllabus, the company must get the right book to the right professor or department head at the right time.

On one system, a salesperson must track all courses offered within a 30- to 50-school territory, know the people in charge of buying the texts and have access to the textbook publishing schedule. A new system will enable the company to capture lots of data — from a teacher's buying preferences to a special request from a department — needed to land potential sales that now fall through the cracks.

Although revenue at the educational and professional publishing unit is up — 5.8%, to $208.4 million, for the most recent quarter — the unit posted an operating loss of $39.7 million. That was down 6.6% from the same quarter a year ago.

EASY CHANGES

By the beginning of next year, representatives should be using a browser and a custom-designed Web interface that can be changed on the fly.

The new system will cost about $1.5 million, will take about eight months to build and install and should pay for itself in less than a year, Bartlett said. The company expects that whatever work is put into the system will provide three times the payback in added functionality. Sales representatives will use the system to sell in teams and share scheduling and publishing information.

But the Web-based system will lower management and overhead costs in the long run, he said. There is no software to load on clients, no training to use a client/server-based system and Web-based data can at some point be shared with McGraw-Hill's customers who need to make or check orders or get account information.

"If we've got browsers, we don't have to do anything else," Bartlett said. "It's about ease of use." □

Finding knowledge

CONTINUED FROM PAGE 69

London subscribers search an archive of more than 40 million documents.

Used internally among *Financial Times'* employees, the search function could be considered knowledge management.

At The Association of Trial Lawyers, a trade group in Washington, installing an online search system based on Verity's search software replaced eight researchers and resulted in faster searches.

"The data was in nine different databases, each with a different underlying structure," said Jerry Miller, director of research.

Carl Frappaolo, vice president of The Delphi Group in Boston, said, "There is an advantage to coming at [knowledge management] from a text-search angle if you want to reuse explicit knowledge.

"This is knowledge that can be codified and stored; it's not experience."

Another strength of search systems is their ability to scan across multiple repositories, Frappaolo said. □

NEW PRODUCTS

THINKING TOOLS, INC. has announced Think 2000 Version 2.0 for year 2000 risk assessment and prioritizing year 2000 conversion projects.

The Monterey, Calif., firm said the tool helps users assess the business impact of year 2000 date change problems. Pricing starts at $30,000.

Thinking Tools
(408) 373-8688
www.thinkingtools.com

VERITAS SOFTWARE CORP. has announced NetBackup 3.1, storage management software.

The Mountain View, Calif., company said the software can back up files and applications on NT and Unix servers. It has a new server-independent restore capability and a new FlashBackup technology designed for hot backups.

Pricing starts at $3,995 for Windows NT servers and $8,500 for Unix servers.

Veritas Software
(650) 335-8000
www.veritas.com

BLUE SKY SOFTWARE CORP. has announced RoboHelp 5.5, a help system authoring tool for Windows applications.

The La Jolla, Calif., firm said the tool lets developers produce multiple help formats from one source. It supports nine formats, including cross-platform WebHelp from Blue Sky, Microsoft Corp.'s Windows CE Help, all versions of WinHelp and Netscape Communications Corp.'s NetHelp 2.0.

RoboHelp 5.5 costs $499.

Blue Sky Software
(619) 459-6365
www.blue-sky.com

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Servers & PCs

Large Systems ♦ Workstations ♦ Portable Computing

Briefs

RACIAL DIVIDE

Do you have access to a computer at home?

All ages	
White	44%
Black	29%
Students (High school and college)	
White	73%
Black	33%

Base: 5,813 phone interviews, Dec. 1996 to Jan. 1997

Source: Nielsen Media Research, New York

Conference workstation

Intel Corp. is shipping its TeamStation System 4.0, a conference room workstation that combines videoconferencing, Internet access, corporate network access and PC applications. It costs $9,999.

Java-to-Unix access

SCO, Inc. last week released a version of its Tarantella software aimed at letting users access Unix applications from any Java-based client. A plug-in option lets users access IBM's 3270-based mainframe applications via any Java-based client. Pricing is on a per-user basis and starts at $395.

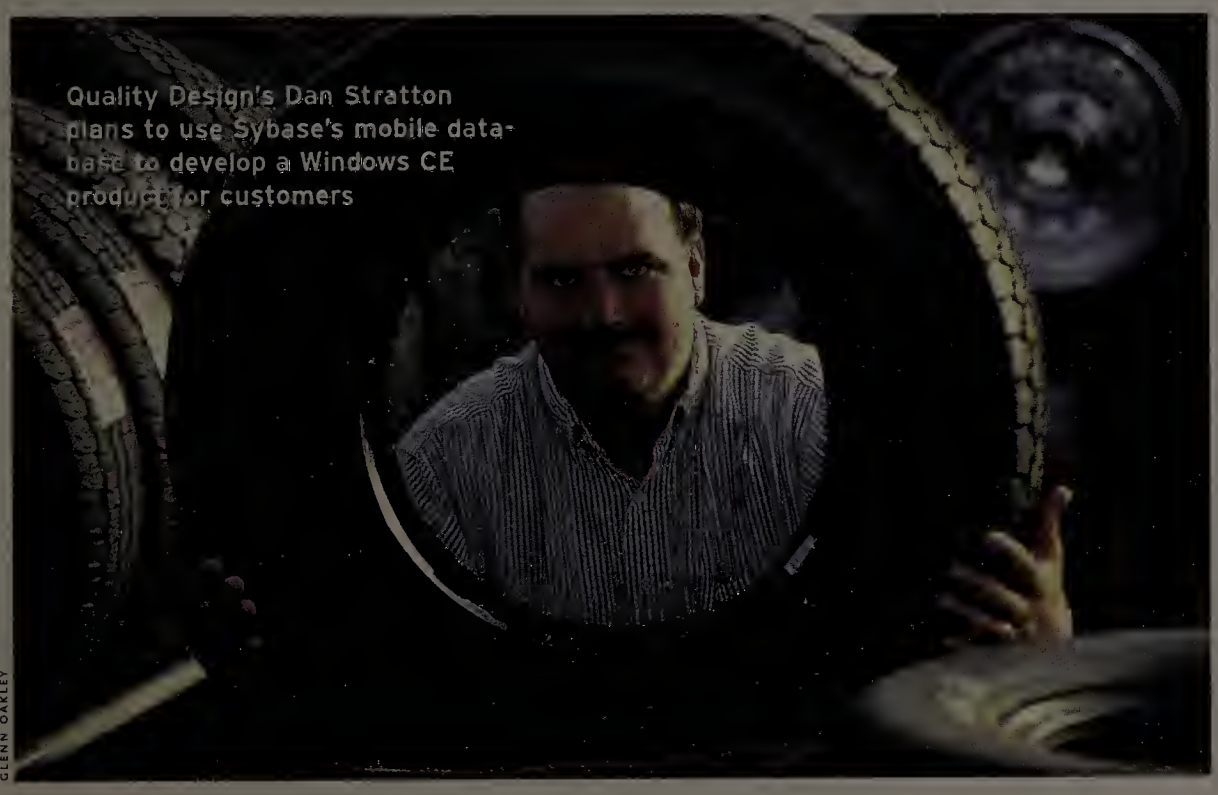
STAYING IN TOUCH

How mobile workers communicate with their company:

Regular telephone	87%
Wireless phone	63%
E-mail	61%
Pager	56%
Faxes	53%
Remote database access	21%
Administrative staff	10%
Dispatcher	6%

Base: 300 users, multiple responses allowed

Source: Business Research Group, Newton, Mass.



Quality Design's Dan Stratton plans to use Sybase's mobile database to develop a Windows CE product for customers

GLENN OAKLEY

Tired of sales terminals?

▸ *Handhelds may replace them as Win CE matures*

By Kim Girard

GUIDO BERTOLI, who owns two Big O Tires franchises in California, can't wait to liberate his employees from sales terminals and provide the freedom of handhelds.

Bertoli said he hopes next year the staff will be able to access the company database on a handheld and grab information about a customer's sales and service history by punching in a last name, license plate number or telephone number.

"I cannot wait," Bertoli said. "Instead of running in and entering an order, I can [use the handheld]. It's going to save me some time. Any time we save time, it ends up being money, and I can get to the next customer faster."

Several vendors, including Oracle Corp. and Sybase, Inc., are scaling down software for small mobile databases that run Microsoft Corp.'s Windows CE, a light version of the Windows 95 operating system.

Oracle and Sybase also plan to offer the software for use in other handheld products such as 3Com Corp.'s PalmPilot and Psion PLC's devices. Those database offerings will work for some companies, but analysts

Handhelds, page 76

STORAGE

'Black box' speeds data transfer

By Nancy Dillon

MOVING DATA between mainframes and large servers is serious business for May & Speh, Inc. That's why Chief Technology Officer Terry Cieslak pulled the process off his network.

During a typical day at the direct-marketing service bureau in Downers Grove, Ill., 300G bytes of data are transferred from MVS to Unix storage in an effort to populate data warehouses, Cieslak said.

Originally, the company moved the data via cross-platform tape cartridges. When that process proved too labor-intensive, it tried the network and got negligible performance gains. Neither system could handle the demand.

Then Cieslak tried a "black box" from Bus-Tech, Inc. The box now sits between his mainframe and enterprise servers and creates an isolated network

Black box, page 76

New PCs to ship with more tools for management

By April Jacobs

PC MAKERS shot for a new high in performance last month with systems based on faster buses and Intel Corp. chips that run at 350 MHz and 400 MHz. And they added features to give systems administrators more control over the new systems.

But because most of the management features are proprietary, users with more than one brand of PC will have to use a

New PCs, page 76

Dell server draws praise for flexibility

By April Jacobs

DELL COMPUTER CORP.'S new PowerEdge 2300 workgroup server is the first to feature Intel Corp.'s latest processors and 100-MHz system bus.

Some users said the server will give them more flexibility and performance than in the past, allowing for an easy bridge between low and midrange requirements.

"This server allows me to start with minimal specs and grow it without having to buy another box. So depending on how I configure it, it could be a low or midrange server," said Ash Shehata, chief information officer at Antelope Valley Healthcare System, Inc. in Lancaster, Calif.

Users can take advantage of the server's ability to be configured as an entry-level-to-midrange computer by expanding it instead of swapping it out if they need more headroom, said Jane Wright, an analyst at Datapro Information Services Group, a consultancy in Delran, N.J. That saves time and money, she said.

The PowerEdge 2300, which debuted last week from Round Rock, Texas-based Dell, offers configurations that range from single or dual 333-MHz Pentium II processors to 400-MHz processors with 100-MHz system and memory buses. It also offers storage of up to 512G bytes. Pricing is from $3,276 to more than $19,000.

Dell server, page 76

Dell's PowerEdge 2300:

Cost: $3,276 to more than $19,000

Availability: Immediately

Chip speeds: 333-, 350- and 400-MHz Pentium II

Memory: Up to 1G byte RAM

Storage: Internal: Six 1-in. drives with 9G bytes each, or four 1.6-in. drives with 18G bytes each. External: 500G bytes

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New PCs

CONTINUED FROM PAGE 73

mix of tools to support them, analysts said.

The new functions include system bus security, asset management, configuration management, integration and fault management.

For example, Round Rock, Texas-based Dell Computer Corp.'s new Deskpro desktops include a tool that lets administrators embed up to six lines of text within a machine's BIOS. The text, which is password-protected, can act as a tag to identify the machine's owner or contain other information to protect against theft.

Dell also added several configuration tools on the client that let any Desktop Management Interface-compliant systems management server drill down on a PC to discover what kind of processor, memory, drivers, operating systems or applications are running on it.

IBM's 300PL PC, equipped with its Alert on LAN technology, polls systems on a network to find problems and can receive alerts even from machines that are turned off.

The new technology was designed to keep technicians in their seats instead of running out to troubleshoot PCs. "I'm all ears for technology that can cut down on maintenance because we run a very lean outfit," said Doug MacNair, operations manager at Redhook Ale Brewery Corp. in Seattle.

APRIL JACOBS

Redhook's Doug MacNair: The brewery needs technology that can reduce PC maintenance

MacNair said PC-based systems require far more maintenance than the company's proprietary terminal systems, which run in a more centralized fashion. MacNair said PC management that allows remote troubleshooting, updating and maintenance will help keep labor costs down.

And Compaq's new Deskpro line of corporate desktops are being split into two models, the EN and EP. The Deskpro EN model's components will stay consistent for 12 to 14 months in an effort to allow users to cycle PCs over a period of time without having to support multiple configurations. That can lead to driver and support issues, Compaq's Michael Takemura said. □

Dell server

CONTINUED FROM PAGE 73

Shehata said Antelope Valley recently decided to swap out servers from Compaq Computer Corp. in favor of Dell servers because the health care company could more easily order custom-configured servers with a wider range of peripherals.

Compaq's servers ship with their own brand of network interface cards and SCSI adapters, but Dell offers several industry-standard products such as 3Com Corp.'s network interface cards and Adaptec, Inc.'s Ultra Wide SCSI adapters.

COMPETITION

Compaq, in Houston, and IBM, in Somers, N.Y., reportedly have plans on the drawing board to offer similar systems, according to Amir Ahari, an analyst at Framingham, Mass.-based International Data Corp. But Dell's jump will give it a temporary edge, he said.

Ahari also said the higher processor and system bus speeds will let the 2300 offer more performance than, for example, a Compaq ProLiant 3000 midrange server, which has motherboards based on the older, slower Intel LX chip set.

Users should pay attention to the system bus speed before buying, he said. The new 350- and 400-MHz Pentium II PCs have the 100-MHz system bus and the new, faster Intel BX chip set. But slower PCs usually have 66-MHz buses.

REALITY CHECK

Also, users shouldn't automatically expect enormous increases in application performance from the new server, said John Wohn, division manager at Long Island Lighting Co. in Hicksville, N.Y.

Depending on the configuration they choose, the PowerEdge 2300 may feature only a slight increase over Dell's 2200 server, which supported Pentium IIs as fast as 333 MHz on a 66-MHz system bus.

The 2300 also features hot-pluggable drives, usually reserved for higher-end machines such as the Compaq ProLiant 5000 and 6000.

"Hot-swappable drives are a big plus because if there is a failure, you can still leave the server online," Wohn said.

The PowerEdge 2300 is available immediately. □

Handhelds

CONTINUED FROM PAGE 73

questioned whether remote users with more complicated applications such as sales force automation will want to dump notebook PCs for a handheld.

But for manufacturing and distribution applications, handhelds are a perfect match, according to Bob Egan, an analyst at Gartner Group, Inc. in Stamford, Conn. "The world will evolve toward an audience that just wants access to a network. The platform of choice will be what you find best," he said.

QUICK AND EASY

Dan Stratton, a database analyst at Quality Design Systems in Eagle, Idaho, plans to use Sybase's mobile database to develop a Windows CE product for customers. Quality Design makes Tiremaster, a point-of-sale accounting system for tire stores.

The idea is to make the handheld an extension of the server and give users quick access to information about inventory, customers and orders.

"Tire stores wants to get the salesperson out in the lot with customers and get the computer out of the way," Stratton said. "They'll look at devices to do that," as car rental companies already are doing, he said.

Stratton also said a test product should be rolled out within 18 months.

The company has 750 customers, 70 of whom use Windows applications; the rest are on DOS. It may take some time to bring users up to speed with the CE product, Stratton said.

"Tire stores are pretty backward," he said. "We've literally replaced a 3-by-5-card system in their stores."

Oracle, in Redwood Shores, Calif., and Sybase, in Emeryville, Calif., plan to start testing their Windows CE products in the second quarter. □

Black box

CONTINUED FROM PAGE 73

for moving data at channel speeds.

"The box is four times as fast as tapes or our network," Cieslak said. "Now if we have 300G bytes of data to move, the process only takes 12 hours, not several days."

Burlington, Mass.-based Bus-Tech last week announced the DataBlaster2/HFT. The $25,000 device can support up to two Escon mainframe connections on one side and up to four Ultra SCSI Unix or Windows NT server connections on the other. It comes with software from Harbor Systems Management Ltd. in Calgary, Alberta, for both file transfers and database backup and recovery.

Similar products include FileSpeed from Computer Network Technology in Minneapolis and Link/9000 from General Signal Networks, Inc. in Stamford, Conn. (see chart).

BETTER THAN NETWORK

Devices such as Bus-Tech's box help users with high-speed disaster recovery, data warehouse loading and data consolidation, said Mark Nicolett, an analyst at Gartner Group, Inc. in Stamford. "These tasks aren't suitable for general-purpose network connections because of bandwidth constraints," Nicolett said. "Isolated connections work much better."

Nicolett said users also can implement large arrays that consolidate mainframe and open-systems data in one subsystem. Makers of such arrays include EMC Corp. in Hopkinton, Mass., and Hitachi Data Systems Corp. in Santa Clara, Calif.

But products such as Bus-Tech's might work better for some users because they are "less disruptive to hardware already in place," Nicolett said.

IMPROVED RESPONSE TIMES

Joe Sotham, manager of systems management at Insurance Corporation of British Columbia (ICBC) in North Vancouver, said he has been using Harbor's backup software for several years and plans to use the DataBlaster2/HFT to improve mainframe-to-server recovery response times.

ICBC is consolidating its midrange servers into big enterprise servers, and Sotham said the 250M to 500M byte/hour restore times that he was getting over his Token Ring network during business hours were becoming a liability.

"With DataBlaster, we don't have to worry about sharing bandwidth; we're getting about 10G to 20G bytes an hour," Sotham said. □

BACKUP OPTIONS

Product/Vendor	Components	Protocols	Backup	Price
DataBlaster2/HFT from Bus-Tech and software from Harbor Systems	Escon-to-SCSI conversion box with Harbor File Transfer software	Native Channel Protocol (no TCP/IP stack required)	Comes with Harbor backup agents for NT Exchange, Oracle, SAP R/3 and SQL	Starts at $25,000 for hardware and software
FileSpeed from Computer Network Technology	Escon-to-SCSI conversion hardware and file transfer software	Native Channel Protocol (no TCP/IP stack required)	Optional GUI-based backup client ($10,000 extra)	$25,000 for file transfer software; $25,000 for hardware
Link/9000 from General Signal Networks	PCI server card for connecting server I/O directly to Escon	TCP/IP (unless user buys Channel Drive driver for extra $5,000)	Works with any backup software that can run on TCP/IP	Starts at $12,500

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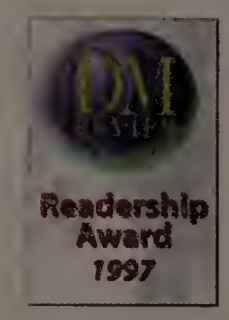
Category Data Warehousing



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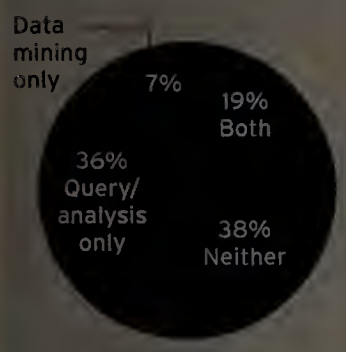
Briefs

DECISIONS, DECISIONS

Have you adopted data mining and query/analysis tools?



Base: 793 IS directors or other senior executives at U.S. companies

Source: International Data Corp., Framingham, Mass.

Vertical bundles

NCR Corp. last week said it will extend data warehousing bundles that support customer analysis and development of targeted marketing campaigns from the telecommunications industry to other vertical markets. Those markets include retail, insurance and consumer goods manufacturing. The bundles will be rolled out this summer. Pricing will start at $850,000.

AS/400 packages

ShowCase Corp. based in Rochester, Minn., last month released an upgrade of its data warehousing software for IBM's AS/400 systems. The Strategy 2.0 suite features centralized management capabilities and support for pulling in data from DB2 databases. Pricing starts at $20,000. The suite is due to ship in June.

Keep those customers

Paris-based SLP InfoWare, Inc., a maker of data mining tools for telecommunications and financial services companies, announced technology that automatically builds predictive models to identify customers who are likely to defect. The Churn/Customer Profiling System (CPS) software can send the findings to telemarketing representatives, who can then call customers with special offers. The automated model is included in a Churn/CPS 2.3 upgrade. Pricing starts at $300,000.

Pick a pro the first time

▸ *Consultants can make or break a project; know your needs up front*

By Tom Duffy

COMPANIES MAY OBSESS about the hardware and software they choose to build their data warehouse, but they barely glance at the resumes of the $1,200-per-hour consultants they hire to guide them through the process.

PROJECT PLANNING

That is often the case, despite the fact that companies spend 20% of their data warehousing dollars on consultants, said Richard Rist, vice president of The Data Warehousing Institute in Bethesda, Md.

But companies would be well-advised to carefully evaluate their options when it comes to hiring outside help, he said.

"With hardware, you can always add memory and disks later," Rist said. "But if you made basic assumptions wrong in the interview and design process for the data warehouse, the whole thing can go down the tank."

Not every company uses consultants to get their data warehouse project under way, but those that do should look for a consultant who fits their particular business need, among other criteria (see box, page 80).

For example, Burnham, an Atlanta-based company, found a consultant that helped it focus on putting the most critical information into its 25G-byte data warehouse.

Burnham, which provides logistical support such as transportation and delivery of finished goods, decided to put into the warehouse financial data, inventory loss and information about the timing of pickups and deliveries.

Staffers in the financial and technology departments then use the data warehouse to calculate how profitable individual contracts are.

"Data warehousing can provide an awful lot of data, but if you're not careful, it won't be very informative," said Burnham's Chief Information Officer Colin Drummond. "So we thought it was important to have someone with strong project management skills to assist not only their staff but ours in keeping focused."

Consultants, page 80

COMMENTARY

The mainframe: in data warehousing's future

BY SHAKU ATRE

MAINFRAMES DIDN'T DIE; they became OLTP superservers. And as data warehousing penetrates ever deeper into the way companies do business, expect to see mainframes become "super-superservers" that pull together and manage far-flung warehousing and transactional applications.

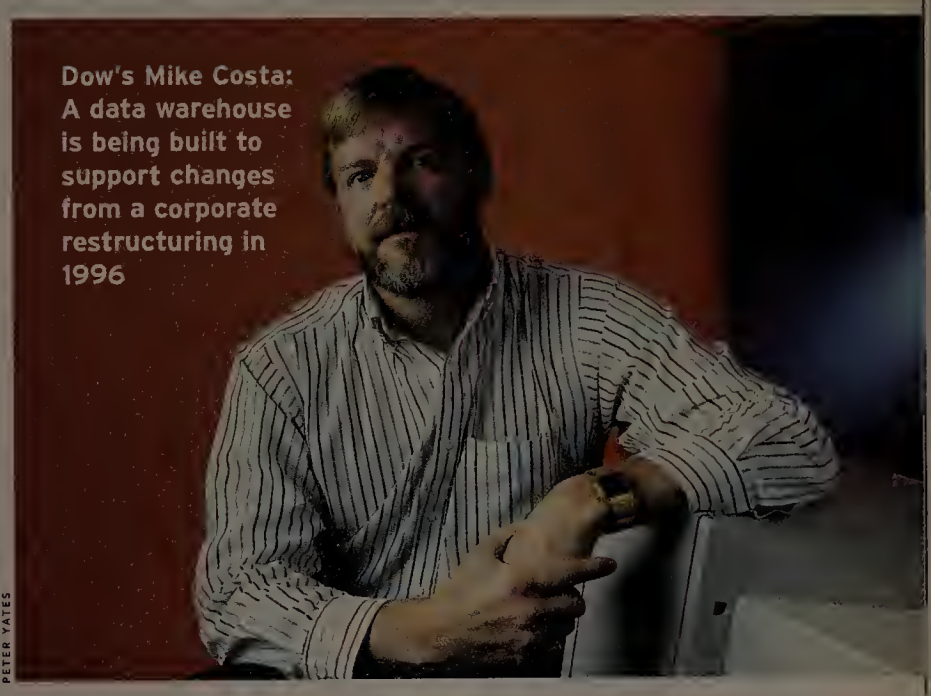
By 2001, about 80% of data warehousing investments market-wide will be large centralized data warehouses or central warehouses that feed dependent data marts, according to a recent survey by Palo Alto Management Group. Both architectures favor a powerful and highly manageable platform such as the mainframe.

The survey also predicts, based on user responses, that the average data warehouse will grow in size by a factor of 36 over three years. Do the math: That means that a 100G-byte warehouse could explode to 3.6T bytes in only three years.

Other analysts predict even greater increases in the number of end users who must be supported. All those requirements play to the mainframe's strengths.

And data warehousing keeps changing. The day before yesterday, companies built centralized enterprise data warehouses. Yesterday, tactical data marts were the rage. Today, we see more companies finding ways to build data marts fed by central warehouses. Tomorrow, we will see a change in the function of data warehousing itself, as new hybrid applications come online that blur the line between

Atre, page 80



Dow's Mike Costa: A data warehouse is being built to support changes from a corporate restructuring in 1996

PETER YATES

Taking responsibility for the bottom line

▸ *Dow business units use warehouse for new strategy*

By Linda Wilson

A RECENT RESTRUCTURING pushed accountability so far down at The Dow Chemical Co. that 2,500 users — from corporate executives to shop floor supervisors — now use a data warehouse to track performance in their domains.

Corporate executives take a broad view of information on products or geographic regions. Shop floor supervisors track performance in areas they manage, such as maintenance, labor or supplies.

The warehouse provides "the information needed to perform daily activities and/or needed to make tactical or strategic business decisions," said Mike Costa, global process controller at Dow.

That is a common goal of data warehouses.

"That is fundamentally what you are trying to do. You are trying to understand your business from different levels — by market segment, by customer, by product," said Richard Finkelstein, president of Performance Computing, a Chicago-based consultancy that specializes in data warehouses and intranet strategies.

DIFFERENT MODEL

But it wasn't always that way.

Before the 1996 restructuring gave business units responsibility for their own bottom lines and the warehouse debuted a year later to support that, there was only one source of financial information at the Midland,

Dow, page 80

Consultants can make, break project

CONTINUED FROM PAGE 79

Burnham also looked for a consultant who wasn't wedded to a particular technology in building its warehouse. That warehouse cost about $250,000 and went online last fall.

That was a good strategy, said Mitch Kramer, a senior analyst at Patricia Seybold Group, a consultancy in Boston.

"There is no single data warehouse solution, but there are a lot of religions," Kramer said. "It's dangerous to work with a consultant who is completely inflexible in their technology approach."

> **"It's dangerous to work with a consultant who is completely inflexible in their technology approach." – Mitch Kramer Patricia Seybold Group**

ODS Health Plans, Inc., an Oregon-based insurer, was looking for a consultant who could understand various business processes. That is because ODS functions both as a traditional health insurer and as a health maintenance organization — entities that have very different requirements for breaking down and reporting financial data.

"We felt that we needed somebody who could interview and understand the various entities inside the company," said Jeff Sexton, senior programmer and analyst at ODS. "We wanted someone with less of a technical bent and more of a business bent."

Sexton said because the project was so complex, the company hired a consultant to help it choose a front-end system for the 20G-byte data warehouse. The consultant led ODS to Brio Technology, Inc.'s BrioQuery, which allows ad hoc and canned queries of the warehouse.

"We weren't interested in someone with a special interest in Sybase or Oracle because we wanted to evaluate the different solutions and compare them to one another," said Sexton, who declined to estimate the total cost of the project.

The care in picking a consultant paid off in the result: ODS got an effective system. For example, Sexton said, information requests from group insurance customers used to take about three days to process because each query had to go through the information systems department. Now, administrators can pull up the information themselves so the requests can be turned around in a day, he said.

"The biggest impact is that the company functions more efficiently," Sexton said. "We're doing things that we weren't able to do before."

When it comes right down to it, choosing a consultant for a data warehousing project isn't much different than choosing one for any other complex information technology job.

"Whether it's the first client/server application or a Web site, you can make the same kinds of mistakes. Common sense should apply," Kramer said. □

Duffy is a freelance writer in Somerville, Mass.

Tips for hiring a data warehousing consultant

1. Blend analytical and intuitive decision making in your selection process.
2. Use trial services to overcome reluctance to use outsiders in your organization and to see the consultant in action.
3. Insist on a customized approach. Don't be tempted to find one person to do it all.
4. Don't expect the consultant to work miracles; take responsibility and set realistic expectations.
5. Don't abdicate too much authority. Make sure your managers retain control, share in decision making and recognize they are ultimately accountable.

Source: The Data Warehousing Institute, Bethesda, Md.

Atre: Mainframes figure in future

CONTINUED FROM PAGE 79

operational applications and business intelligence applications.

Those applications will make the results of data mining and data analysis available in real time to transactional systems users. For example, consider an application in which a person taking a phone order from a customer automatically will receive suggestions for selling to that specific customer, including special incentives. Those suggestions would be based on the customer's order history, analyzed on-the-fly by data mining techniques.

That kind of application becomes more feasible when the data is moving from a decision-support application to an online transaction processor (OLTP) application at channel speed within the mainframe or between clustered mainframes. And what else but a mainframe could handle a call center application that automatically sends queries from several thousand telemarketers at once?

But beyond that, imagine the comprehensive capability needed to simultaneously handle such hybrid applications and the more traditional data warehouses and data marts.

Together, those systems will span the company and must be able to gather, organize and disseminate information to and from many key operational systems.

Larger companies probably will need mainframes to handle the data volumes, concurrent usage demands and complex connectivity requirements and to manage the PC, midrange and Unix servers that also will need to participate. Such an enterprise capability will be difficult to build and maintain.

To date, data warehousing and decision support have functioned at the periphery of operations, helping decision makers at the top and middle of the organization monitor and manage more effectively. But soon, decision-support information will become available routinely to line personnel to help them work. Such information also will touch customers that interact with the company. For example, banks are developing applications that flash personalized sales messages while a customer is at an ATM. So expect to see more comprehensive data warehousing capabilities eventually impact the jobs of just about everyone. Actually, we should call this business intelligence; it encompasses the concepts of data warehousing, online analytical processing, decision-support and data mining.

For mainstream companies, that kind of business intelligence is still a few years away — though some progressive users already employ it. It's a complex undertaking, and you need to find economies of scale.

That's where the mainframe comes in — as the "super-superserver" that can manage both transactional and business intelligence systems. □

Atre is president of Atre Group, Inc., a consulting firm in Port Chester, N.Y., that specializes in data warehousing and database technology. Her E-mail address is shaku@atre.com.

Dow business units use warehouse for new strategy

CONTINUED FROM PAGE 79

Mich.-based company. That was an inflexible homegrown, management accounting system.

Fed from SAP AG's R/2, the program ran on the mainframe using an IBM DB2 as its database.

It produced paper reports that broke down by geography sales, costs and other elements.

"If you had a question, you had to go back to [a financial] analyst to understand what the answer was," said Costa, an MBA and accountant in the finance organization. Costa is responsible for the data warehouse.

Now the warehouse feeds multidimensional data marts — including 12 in finance, three in sales and three in logistics — that allow users to look at the same data in many different ways.

Those dimensions include business, geography and industry, and each dimension has many layers.

For example, the geography dimension begins at the global level and goes down to the "ship-to" address.

QUICKER ACCESS

Dow uses PowerPlay, an online analytical processing tool from Cognos, Inc., to build multidimensional data cubes monthly. Users can then access those cubes.

The system "allows us to get information very quickly and very easily. Now, a salesman can look in a cube and see what the sales volume was for customers x, y and z. Before, he would have to call an accountant, who would run a report," said Martha Margurno, global support services controller.

The time savings is significant, too: five minutes vs. two days, she said.

"Our accountants now focus on the analysis of the data, rather than on just getting the data out of the system."

The warehouse is an Oracle Corp. relational database on two Alpha 8400 servers from Digital Equipment Corp. running OpenVMS.

Data is extracted daily from a mainframe-based SAP R/2 transaction system.

Plans call for including three years of data; the warehouse so far contains five quarters' worth. Historical data wasn't included because converting it would have cost too much, Costa said.

Costa declined to release specific cost or return-on-investment (ROI) figures, but he did say that Dow saw an ROI in 1997, less than a year after making the majority of the investment in the warehouse.

The warehouse and marts have been so successful in providing business users with data about actual performance that Dow is now adding some data about projected performance for planning and budgeting purposes.

Because Dow doesn't have a centralized business process or information system for planning and budgeting, the company first will develop an integrated process and data-capturing system, which will then feed the warehouse.

"We would like to be piloting a solution in late 1998, going operational in the fall of 1999," Costa said. □

JIM CHAMPY

DIVINING YOUR CEO'S AGENDA

If you could peel away the chutzpah, ego, management "presence," truculent optimism and whatever other wrappings your CEO uses to hide his humanity, you'd understand more about what the boss really wants for the company than you could learn from any statement in the annual report.

Indeed, it's probably more important for IT managers to understand what's on the CEO's mind than to understand the company's strategy.

I know that statement seems heretical when so much energy is spent on management processes such as forecasting, planning, budgeting and strategizing. But having an understanding of what I call the "executive agenda" may make the difference between getting the job done and being out of a job.

Trouble is, absent the possibility of asking them face to face, how does one know what, exactly, is going on in the minds of CEOs?

There are several ways to go about it. You can employ fortune tellers or soothsayers. You can hire management consultants. Or, you can take the word of corporate "shrinks" such as David Nadler, Richard Pascal and myself. But first, the pitfalls of simply following standard procedures include these:

▶ Formal processes such as planning often take on a life of their own — sort of like "connecting the dots" — that are totally disconnected from what a line executive sees as important.

For example, a few months ago, I watched as a consumer products company obsessed over its annual resource allocation process. The CEO, himself obsessed over changing markets, ignored the process.

▶ Watching what executives do won't always tell you what's important to them. That's because the urgent forces the important out of their workday. Oftentimes, an executive I see doing one thing later tells me he was thinking of another.

▶ And if you need help figuring out what's going on, be careful in hiring a consultant. (Here, I must confess that I am one.) Often, consultants demonstrate their "insights" by oversimplifying a complex condition.

Take, for example, what's going on at Boeing. It is clearly the world's leading commercial aircraft manufacturer, often beating out its nearest competitor, Europe-based Airbus, in big deals. Consultants often hailed Boeing as a paragon of U.S. competitiveness based on market share.

But it isn't that simple. CEOs also have to worry about costs, quality and complex customer demands. Thus, Boeing — which is digesting its acquisitions of McDonnell Douglas and the defense units of Rockwell International — is laying off about 20,000 redundant workers and standardizing all its systems. With 65% market share, it also decided not to build a super-huge replacement for its 747. Its CEO, meanwhile, saw his bonus pay cut by more than 50% for presiding over the first corporate loss (thanks to the acquisitions) in 50 years. What do you suppose is on his mind?

Well, you won't be too far wrong if you assume most of the following issues are on your CEO's mind:

1 COSTS. The need to rethink how to make companies dramatically more efficient hasn't gone away. In fact, with competition, it's intensifying. Look at all the companies that are doing OK-to-well but are downsizing — AT&T, Intel and others. So don't think that just because business is fairly good, IT won't be asked to change how work is done. Figure ways of better, faster, cheaper.

2 GROWTH. Most CEOs have a growth objective on the agenda. But it differs from industry to industry. If you're a Boeing, a bank or a telecommunications player, it's a merger strategy. If you're many other product industries, it's a logistics strategy based on systems that provide customer convenience. Integrate in one industry, design for another. In this environment, IT executives should examine ways to create new products or services for external markets — for instance, the sale of excess computer capacity and software to your industry.

3 BEHAVIOR. CEOs tell me they're increasingly concerned with "culture." What they really mean is that they want people to behave differently. The business is changing faster than their people, and they're frustrated with how slowly people are adapting. Could you develop a low-cost intranet training system to help them?

4 TALENT. CEOs say they worry about whether they have the right people, especially at the top. That's an agenda item not often openly expressed but almost always present. In companies that have gone through major change, somewhere between 40% and 80% of the senior management team also changes. Help out here and you'll have made a powerful friend. Start by improving the quality of your own team through formal training, academic leaves and assignments outside IT.

In the end, CEOs are frequently guilty of "management by intuition." But I've found that you have to take most CEOs the way you find them. The only thing you can change is your attitude.

So if you steer your assignments in the directions above and read the current literature of your industry, your CEO-divining ability will rise, and you might just contribute more value to the business. □

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f.y.i.

Online recruiting soars, but effectiveness unclear

Can you fill that long-vacant IS job by using the Internet?

Online recruiting is catching on, but just how effective it is depends on whether or not you ask a human resources manager, according to a new survey by the American Management Association (AMA).

Since last year, the use of electronic and online recruiting has grown 353%. And 59% of the 344 human resources managers who responded said their companies now use the Internet to find people. Another 13% said they plan to.

But non-human-resources managers give the 'net much higher marks for effectiveness as a recruitment tool. On a scale of 1 to 5, with 5 being the highest rating, non-human-resources managers rate electronic/online recruiting at 3.3. Human resources managers rate electronic/online recruiting only a 2.66 for most positions and 2.68 for hard-to-fill jobs for which talent is relatively scarce, including information technology jobs.

"I don't necessarily think there's a conflict between the two findings," says Eric Greenburg, director of management studies at the New York-based AMA. Even as they try new techniques to cope with the labor shortage, human resources managers are still having trouble filling jobs. Other managers think more highly of the 'net because they see it as a handy tool when they're looking for a new job themselves.

The AMA surveyed 344 human resources managers and 693 non-human-resources managers and executives for the study, which was released last month at the AMA's annual human resources conference. — Allan E. Alter

Why wait for Y2K testing to discover what's hidden inside the code you "fixed"?

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SPECIAL REPORT TOMORROW'S DESKTOP

The desktop disconnect

ITEM: A *Computerworld* survey of 150 IS managers found that speed and price were the least important improvements they wanted to see in next-generation desktops. Tops on the wish list: Reliability, ease of administration and ease of software management.

ITEM: The average life cycle of a new PC has fallen to about six months, as faster chips and lower prices quickly render existing inventories obsolete.

So let's get this straight:

Users are asking for lower cost of ownership. Vendors are responding with faster chips.

Users are asking for stability. Vendors are giving them more complex hardware and software.

Users are asking for maintainability. Vendors are giving them lower hardware prices.

Talk about a disconnect.

The time is way overdue to simplify the PC. The thing has become too damned complex, unreliable and overpowered. The computer industry is selling Ferraris to people who should be driving Corollas. And every year the industry tells them they need a new model. It's crazy.

PC makers know how to sell two things well: speed and price. But bigger disks and 300M-byte office suites are the last thing people-strapped IS support organizations need. Think of how often your Windows 95 crashes in a typical week. It's no wonder two of the top 10 selling software products last year were packages that fixed problems caused by other software. Ask yourself if your mother could install and use Lotus Notes without a daylong training course. No wonder computer training is a $3 billion industry.

It was frustration with the PC that engendered the whole network computer movement.

Don't get me wrong: I love PCs. I've owned them since 1984 and love to tinker with them in my spare time. But like most people, I have a job to do, and the value of the desktop mainframe I use at work has become questionable.

An IS specialist at *Computerworld* recently spent dozens of hours upgrading me from a 166-MHz laptop to a 233-MHz laptop. Then I spent a Saturday afternoon on my own reinstalling software and tidying up.

The upshot is that I have a brand-new PC that isn't discernably faster than the old one. It's a nice system, but is it helping me work harder or more productively? No.

Then every week or two I pack about 12 pounds of PC technology in my briefcase and lug it to the airport. I will carry this cinder block around my neck for a few days simply so I can get at my E-mail. This is technology overkill to the max. Future generations will look back on this inanity and wonder why we put up with it. Come to think of it, why *do* we put up with it?

That's what this special report is all about. The desktop computer is one of the great innovations of the past 20 years, but it is still an outcast in the complex, integrated information systems that corporations are trying to build today.

It was frustration with the PC that engendered the whole network computer movement. The hype has died down for now, but the user outrage that sparked the network computer movement is very real. PC makers and software companies are, belatedly, trying to respond to customer concerns by building management features in to their products. The early efforts are characteristically disjointed and half-hearted, but they are a step in the right direction.

I think the market will evolve in two very different directions.

On the one hand, computers are going to get smaller and more portable: Witness the astonishing success of the 3Com PalmPilot and the raft of Windows CE devices that are now washing into the market. That will present a host of new management problems as critical corporate data gets dispersed into computers that easily can be left in a pants pocket at the dry cleaner.

On the other hand, network computers are going to take off. No, not the fancied-up terminals envisioned by some early supporters. The network computer will be a tapestry of special-function devices that connect to an IP-based network: telephones, pagers, terminals, appliances and yes, even low-cost PCs. These machines won't bear the NC name, but they'll do what business users and IT professionals alike want to do: provide easy access to information that makes us more productive.

And isn't that what it's all about?

Paul Gillin, Editor
Internet: *paul_gillin@cw.com*

INSIDE

FERGUSON/KAZMAN

Round one: The PC hangs tough as the desktop of choice, a *Computerworld* survey of corporate managers shows. Page 84

MARK ALCAREZ

A funny thing happened on the way to network computer nirvana: Users went crazy for remote computers. Welcome to the undesktop. Page 88

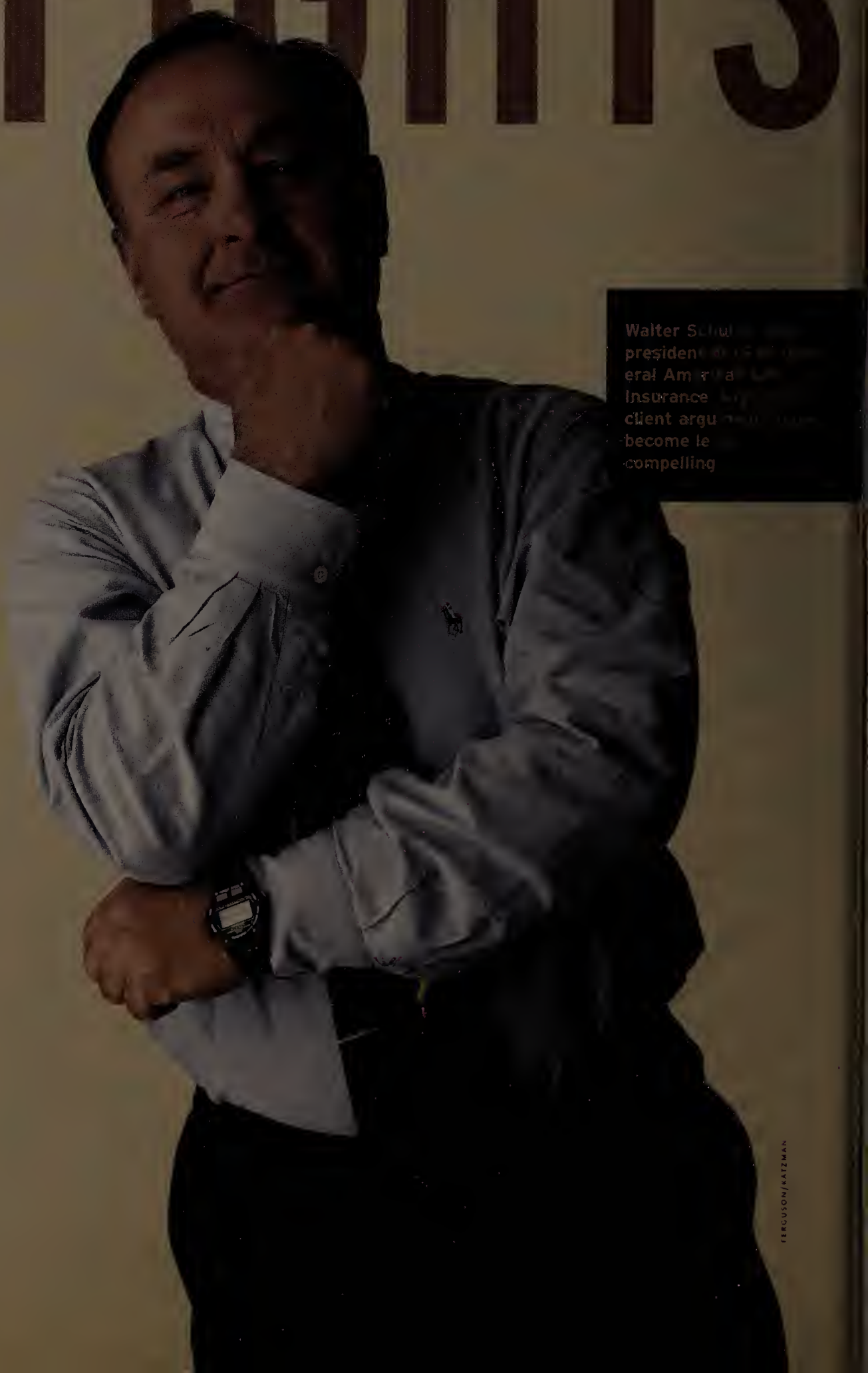
Take away my PC? Users and executives can get defensive when you want to replace a PC with a newer device. Learn how to navigate the choppy political waters of change on the desktop. Page 92

CHRIS HARTLOVE

So what does the future desktop mean for technical support skills? It depends on whom you ask. Small companies may sit tight for a while. Large ones are embracing NT. And everyone wants more networking talent. Follows page 94

NC uncertainty

PC FIGHTS



By Kevin Burden

BLAME IT ON PLUMMETING PC PRICES, the late-to-market appearance of network computers and the expected backlash from users when their PCs get replaced with dumb terminal equivalents. All are foiling the once-lofty predictions of a thin-client craze.

There's a certain appeal to thin clients — whether they are Java or Windows-based network computers. Many corporate information systems departments like the concept of a centrally managed network and the promise of cost advantages, easier administration and greater security. That promise keeps companies curious about the thinnest of network computers and experimenting with pockets of users.

But until the future of the different types of thin clients solidifies further, the full-function PC will remain the stalwart of the desktop. *Computerworld* surveyed 150 user companies on their plans for the desktop and found that the traditional PC for the next three years will account for the majority of desktop devices, whether administered by IS or by the end user. Only a small fraction of desktops will be Java-based network computers, although it appears there will be more movement toward Windows-based terminals.

THIN'S NOT IN?

Asked why they aren't jumping on a thin-client strategy, managers say their uncertainty about the market's future and the weakening benefits of those thin clients are delaying their plans. "We have a vision to move [to thin clients], but vision doesn't always end up on the same road as practicality," says Walter Schultz, vice president of IS at General American Life Insurance Co. in St. Louis. Schultz is prepared to stay with traditional PCs if thin clients don't better prove their worth.

Lower total cost of ownership was the selling point for thin clients a year ago, according to Schultz. It was a corporate hot button that Sun Microsystems, Inc. and Oracle Corp. successfully pushed to start the thin-client hubbub. But Schultz says their arguments have become less compelling in recent months with the continuing drop in PC prices.

Still, Windows-based terminals look to put the spark back into the thin-client movement. Those terminals, which

BACK

After being bullied by NC proponents, the PC is hanging tough as the desktop of choice, a *Computerworld* survey of corporate managers shows

essentially act as display devices for the computing that takes place on Windows NT servers, show the most growth in our survey. Users say they can deliver the same thin-client benefits that NetPCs and network computers do without the proprietary architecture. "And the last thing we want to do is trust our desktop future to a vendor we've never worked with before," says Tom Veneroso, information technology director at Comvestrix Corp. in Lyndhurst, N.J.

Veneroso isn't alone in asking that he be able to rely on his vendor and their products. IS managers in the survey place reliability at the top of their wish list for improvements (see chart, page 86).

BUSINESS BENEFITS

Despite the deteriorating cost argument, Schultz sees several business benefits from thin clients. He continues to upgrade his network infrastructure to support them but won't commit to a specific thin-client architecture yet. "We're struggling with the unknown. Microsoft seems to be the key to all of this, and we're not yet convinced of its commitment," Schultz says. Microsoft Corp. has been known to slow or speed up a market based on its own agenda, Schultz says, and several users say they're also waiting to see how much effort Microsoft entrusts to its Windows Terminal Server.

The argument that network computers will increase the life cycle of desktops is also less compelling today. Thin clients certainly have longer lives than the regularly updated PCs of power users, but the users most commonly targeted for thin clients are using text terminals or decade-old PCs that are barely capable of running a few office applications, says Colin Mahony, an analyst at The Yankee Group in Boston. "To say [network computers] are going to increase the life cycle — c'mon."

F. A. Davis Publishing Co. in Philadelphia is a small-scale example, but the scenario isn't uncommon. The seven customer service agents it plans to outfit with network computers use 386-based PCs that received only a RAM upgrade several years ago to run Windows 95. "We're not counting on an improved life cycle. I'd be happy to come close to what we had with these PCs," says George Ricciardi, IS manager.

Even though a longer desktop life cycle is technically conceivable with thin clients, servers will still need to be upgraded to run the latest applications. "More processing power has always been the biggest reason to upgrade, and thin clients won't change that rule for servers," Mahony says.

And although thin clients are still theoretically cheaper than full-function PCs, they don't deliver as much value for their price. Once IS departments finish beefing up their servers and networks to handle the added traffic thin clients bring, "who knows what the savings will be, if any," Mahony says.

"Costs will just shift from the desktop to the network and servers," Mahony says, especially for users who choose Java-based network computers. "Sending Java applets across requires a considerably bigger network than Windows-based terminals do," he says.

Survey respondents said in interviews that their current investment in PCs is a barrier to any radical move to thin clients. "The only way we will move to thin clients is through a software solution that lets us leverage our [160] PCs," Veneroso says.

What interests Veneroso is Citrix Corp.'s Winframe, a key component of Microsoft's Windows Terminal Server strategy, which could turn older PCs into Windows-based terminals. But Veneroso says he's hesitant to buy until he sees how the technology matures. "I want to be sure this is the best available option. Something new might come along and make this a mistake."

What could be new is a way to turn older PCs into Java-based network computers, but successful efforts will need to work out a glaring performance issue. "Java is already slower than native code; now you want to run it on a 386. These products will take some time," Mahony says. But it's those visions and the uncertainty of where the next product will come from that has users hesitating.

PC fights back, page 86

TERMS OF IMPORTANCE

What does it all mean? Computerworld *asked industry analysts to define the key terms surrounding desktop computing directions. They shared their definitions and put the terms in perspective. We spoke with Colin Mahony, an analyst for the Internet computing strategies planning service at The Yankee Group in Boston; Steve Kleynhans, vice president for workgroup computing strategies at Meta Group, Inc. in Toronto; and Neil MacDonald, research director at Gartner Group, Inc. in Stamford, Conn.*

WINDOWS TERMINALS

"These are a specific class of network computer device designed to act as clients to the Windows Terminal Server, formerly known as Hydra, built on Citrix [Systems, Inc.] Winframe code. They allow you to access Windows applications that are executing on a Windows Terminal Server system." — *Kleynhans*

"Windows terminals are the best example of the 'pendulum swing' back to the days of mainframe computing, albeit with a Windows GUI."

— *Mahony*

"This will be a very popular type of network computer because the simplicity of the device is there and because you don't have to give up your Windows applications. You don't have to give up Microsoft Word, Excel, Lotus SmartSuite or whatever product you are using. You don't have to change out the user's desktop and give them something totally alien."

— *MacDonald*

Terms of importance, page 86

PC FIGHTS BACK

CONTINUED FROM PAGE 85

Not yet for NCs

You'll see little shift from PCs to network computers based on what IS managers say about the percentage of desktops falling into five categories

	Today	1 year from now	3 years
PCs administered by IS	54%	53%	49%
PCs administered by users	33%	28%	23%
Windows-based terminals	8%	11%	13%
Limited-function PCs, also known as NetPCs	2%	4%	5%
Java-based network computers	1%	1%	2%

Averages based on a *Computerworld* survey of 150 IS managers, with a mean of 1,720 PCs installed

IS wish list

Reliability and management issues jump ahead of price and performance when IS managers are asked to grade on a scale of 1 to 5 what improvements they want on the desktop

Reliability	4.5
Ease of administration	4.3
Software management and distribution	4.1
Ease of use	4.1
Ease of installation	4.0
Speed	3.9
Price	3.6

Based on a 1-to-5 scale where 5 is very important and 1 isn't at all important
Averages based on a *Computerworld* survey of 130 IS managers, with a mean of 1,720 PCs installed

Central manageability is one thin-client advantage that still holds a lot of promise. So much so that several users say it is the main reason they're pushing forward with their thin-client plans.

When used properly, central administration can in effect reduce total cost of ownership. Through single versions of applications on servers, IS departments will automatically control what their users get on their desktop. "This means we won't be spending time troubleshooting incompatibilities and system conflicts," Veneroso says.

MANAGED CLIENTS

Veneroso has watched his cost of supporting full desktop systems escalate each year and sees managed clients, whether they are PCs or Java-based network computers, as his best way to attack the problem.

"Too much of our time is spent troubleshooting PCs that were identically configured at one time. We have also seen how the order in which applications are installed affects system performance. Consistency would save us money, and [that] is what we're after," Veneroso says.

First National Bank in Lakewood, Colo., is pining for similar results. It plans to outfit its 28 branches with Java-based network computers by year's end and hopes that giving users only as much functionality as they need will both reduce support cost and increase worker productivity.

"Most of our work is done on emulation software to our mainframe. [Our users] don't need the full power of PCs, so why tempt them with it?" says John Johnson, vice president of IS at the bank.

The heightened security that comes with central administration is also making up some minds about thin clients. Ademco, Inc., a security alarm systems company in Syosset, N.Y., plans to move 40 workers to Java-based Oracle Network Computers in six months in the name of better security.

"If users can't stick a disk in, they can't contaminate their systems. They also can't take corporate knowledge out of the building," says Jean G. Pierre, a hardware engineer at Ademco.

There's also an argument that says housing all your data in a central computer makes it more secure than spreading it around on multiple desktops. And that it's more difficult to attack a central computer than it is to attack the multiple points of entry PCs provide. □

Burden is Computerworld*'s senior features writer.*

TERMS OF IMPORTANCE

CONTINUED FROM PAGE 85

NETPC

"NetPCs are essentially locked-down PCs. These devices contain hard drives yet lack other I/O peripherals, such as a floppy drive, found in most PCs. Not all PC manufacturers have embraced this design. Instead, many PC vendors prefer to offer the more flexible Managed PC [which includes a floppy drive and most peripherals]. Managed PCs embrace standards such as DMI 2.0 from the Desktop Management Task Force, which make them more manageable for the central administrator or help desk technician." — *Mahony*

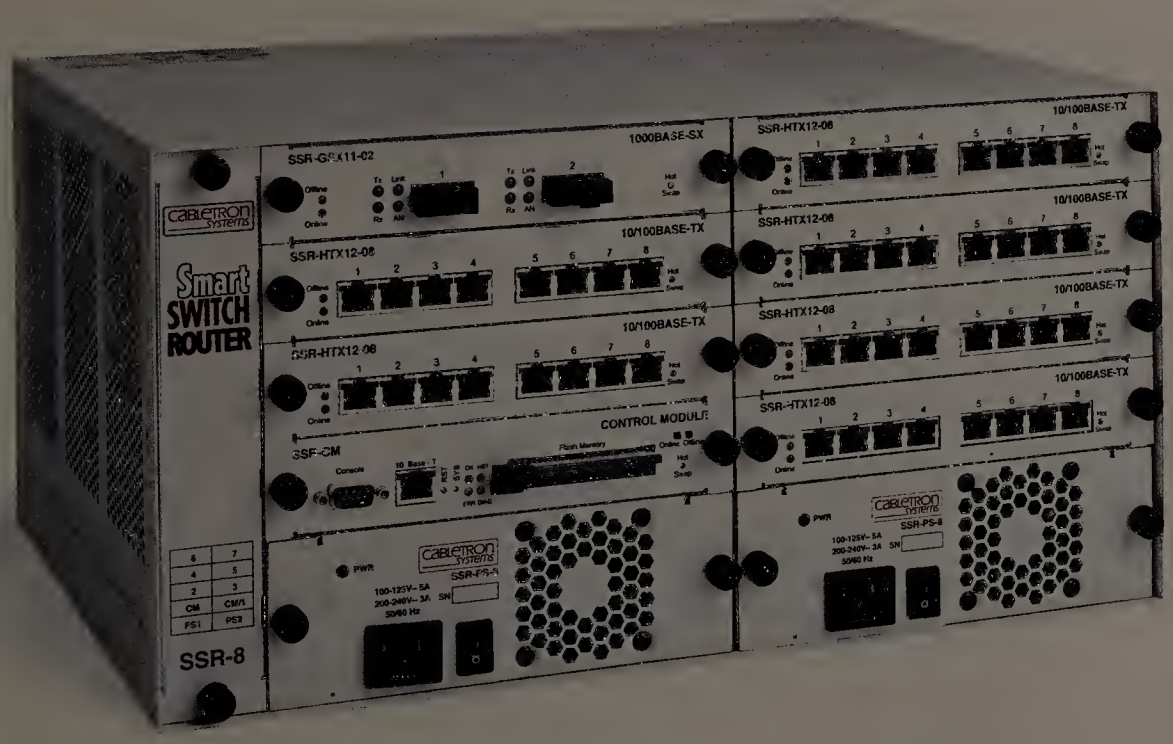
"The goal of the NetPC is to offer a network computer alternative that gives the administrator ultimate control over the desktop without giving up the Windows environment." — *Mahony*

"The NetPC was an ill-advised reactive strategy by Microsoft and Intel." — *MacDonald*

"The important characteristics of the NetPC are being built in to all corporate PCs, and this in turn diminishes the importance of the NetPC as a specific packaging option. Everything that you can do with a NetPC you can do now with any corporate PC. Why would I limit my options by buying a NetPC for the same price? In many cases, NetPCs are turning out to be more expensive because there are limited production runs." — *Kleynhans*

Terms of importance, page 88

Mission-critical applications? Mission accomplished.



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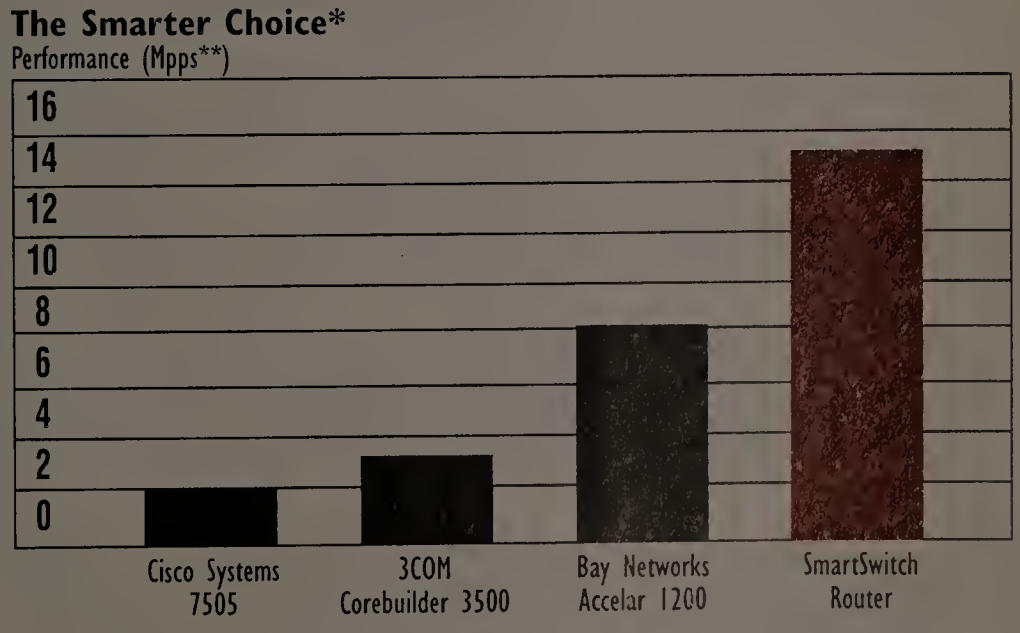

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TERMS OF IMPORTANCE

CONTINUED FROM PAGE 86

NETWORK COMPUTER

"An NC is a server and network-centric end-user computing device with little or no access to the local operating system and storage, and where the permanent state of the device is centrally maintained. These include Java computers, Windows terminals and NetPCs. It is an umbrella term. Microsoft's definition of a network computer is any end-user computing device that runs Java. We disagree with their definition."

— MacDonald

"NCs have struck a nerve, and the issue that reverberates with the clients is total cost of ownership. PCs are too complex, too costly. There's got to be a better way." *— MacDonald*

"The concept of network computing has brought issues such as TCO and centralized control and manageability to the forefront. Although it is still in the early adopter stage, it is spawning new innovative approaches to traditional computing models." *— Mahony*

"The most important thing the NC has done is that it woke up the industry to start thinking about things in a different way. That, in turn, has caused a renewed focus on cost of ownership and caused a renewed focus on creating a more simple, manageable environment. It has brought down the cost of PCs." *— Kleynhans*

Terms of importance, page 90

Remote devices

Just when NCs were supposed to make life easy, users went gaga over handhelds

THE UNDESKTOP

By Deborah Radcliff

Dr. Alice Flaherty, chief neurology resident at Massachusetts General Hospital, wields her 3Com PalmPilot

MARK ALCAREZ

SHUTTLE-BUS drivers use wireless computers to precheck car-rental customers while lot attendants scan return data directly into reservations computers.

A grocery store chain rolls out 100 network computers — not as PC alternatives, but as dumb-terminal upgrades.

Aspiring neurologists carry PalmPilots in their breast pockets, right next to their stethoscopes.

Windows-based information kiosks are in malls and airports. Thin clients are popping up as perks in executive hotel suites. Cellular phones are sending and retrieving E-mail and faxes.

Welcome to the undesktop.

The future (now, that is) wasn't supposed to be like this. Scott McNealy and Larry Ellison said so. The CEOs of Sun Microsystems, Inc. and Oracle Corp. assured the world a year and a half ago that network computers — ultrathin clients and muscular servers capped

The undesktop, page 90

"Today's CIO... Is Tomorrow's CEO"

-Dr. James Martin

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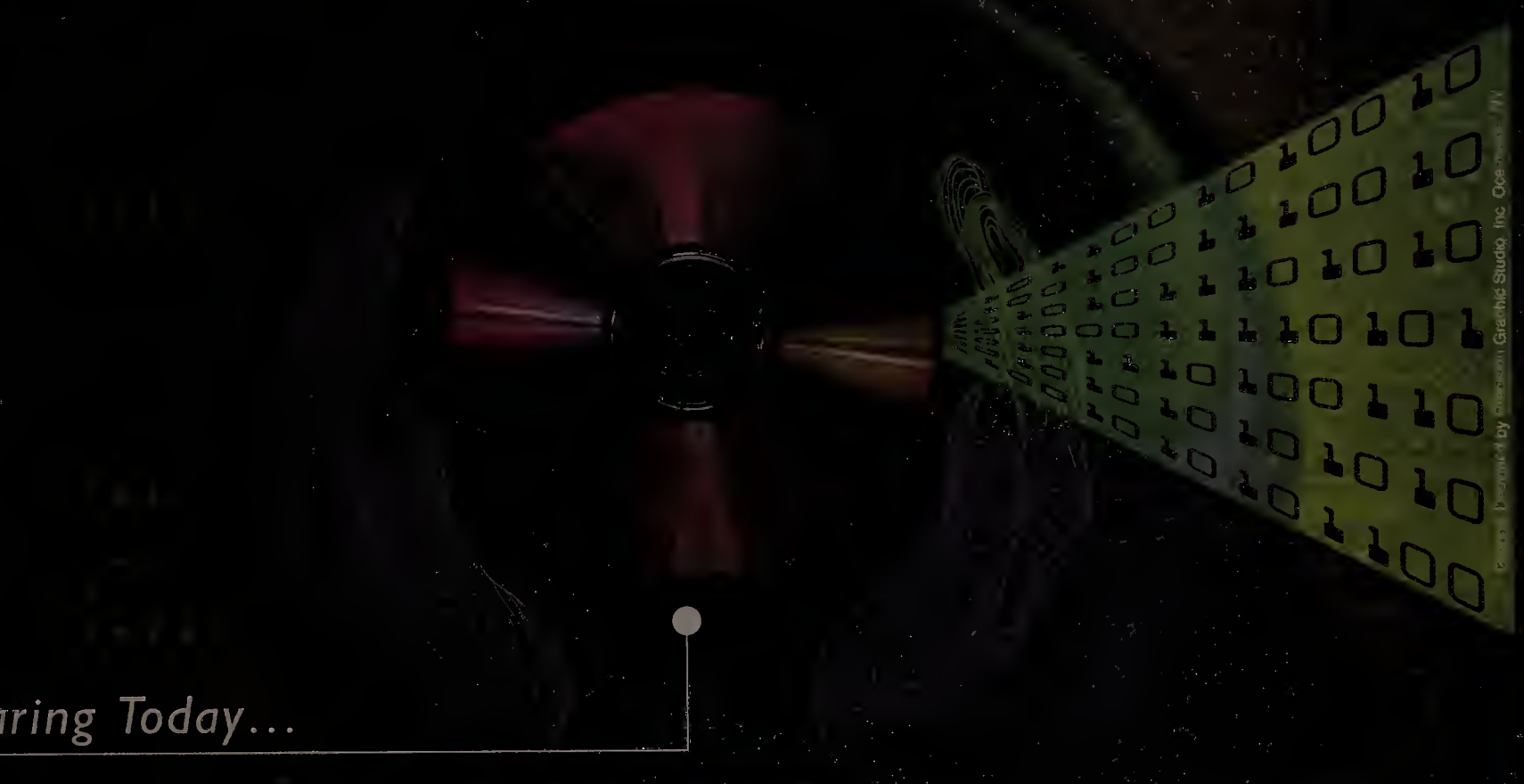

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TERMS OF IMPORTANCE

CONTINUED FROM PAGE 88

THIN CLIENT

"A thin client is any device with no local storage, limited local execution and no local state information. You will get people that disagree with that. For example, Sun will say that the first and the last are true — no local storage and no local state information — but that it can have a great deal of local processing power. I tend to disagree with that because I don't believe you can have a great deal of local execution and not have any local storage. I just don't believe that is a practical design. [Thin client] is a style of computing rather than a specific device." — *Kleynhans*

"For businesses, it is accessibility to consumers and common value chain partners over the [virtual private networks]."

— *MacDonald*

"Thin computing as a model is inherently more manageable because everything is centralized. We believe thin computing as a model is a good model. We just don't like a lot of the devices and how they have been implemented." — *Kleynhans*

Terms of importance, page 92

THE UNDESKTOP

CONTINUED FROM PAGE 88

with a browser interface — would make life simple and cheap for users and information systems alike.

You remember. Your CEO tore out an airline magazine article heralding the onset of the age of the network computer and Java, scribbled, "I hope we're looking into this," and forwarded it to you.

But a funny thing happened on the way to nirvana.

Demand for lower cost and centralized management haven't disappeared. But they've been joined by cries for a great leap forward in remote computing. Users want and need their data wherever they go, and they'll use all types of devices to get it.

So the comfortable PC is morphing into all variety of devices to fit any number of settings.

Those devices will stretch the definition of computing. They're not a fad, but they're not a replacement; healthy growth is predicted for the PC, handheld and thin-client markets alike well beyond 2000.

Some 8.2 million handheld devices will ship this year, according to International Data Corp.

The new devices won't replace the loaded PC. They will settle in alongside it, each finding a niche to suit users' nearly infinite computing needs.

"I don't see anything replacing our PCs," says John Lester, neurology IS specialist at Massachusetts General Hospital in Boston. Lester manages everything from loaded Windows-based PC workstations to dumb terminals and handhelds.

THE LIMITS OF NCs

Far from sweeping the PC from the enterprise, network computers have barely trickled into the network. And those that have usually replace dumb terminals and low-use PCs.

"We're seeing a desire for certain types of applications — airline reservations terminals, kiosks, point-of-sale terminals — for more focused devices with more function than a dumb terminal but in which a PC is really overkill," says Troy Toman, group product marketing manager for Sun's JavaOS.

Beverly Russell, information technology manager at grocery chain E. D. Smith in Ontario, is moving from green-screen dumb terminals to IBM Series 1000 network computers to connect to an IBM AS/400 for basic processing functions. Russell says she upgraded because her users need a more graphical interface and access to the company's World Wide Web-based intranet.

According to Russell, there is hope for the low-maintenance benefits of network computers. "I have 165 fixed-function terminals and 85 PCs," she says. "Guess where the biggest support problems are. My PCs."

But so far, network computers can't deliver on their biggest promise of lower costs, according to Martin Marshall, an analyst at Zona Research, Inc. in Redwood City, Calif.

The reason? Shortly after Sun and others announced the grand network computer plan, PC prices plummeted.

"The terminal shops are used to paying $395 for their replacements. The [network computer] is being bracketed just above this. But coming down from the top is the $800 personal computer," Marshall says. Compare that to the price tags of IBM's 1000 ($999), Sun's JavaStation ($749) and Neoware Systems, Inc.'s Supra ($1,199).

INFO-APPLIANCES

Meanwhile, handheld organizers and radio frequency devices, along with leaner laptops and smart phones, are moving into niches in the enterprise.

Some 8.2 million handhelds will ship this year, according to Framingham, Mass.-based International Data Corp. That's 61.1% growth from last year's 5.1 million units shipped. In addition, consumer digital appliances (such as NetTV and Internet phones) will make up a $13.7 billion market by 2001, IDC says.

Lester issued 25 3Com Corp. PalmPilots to his sleepless residents last year. He made the move after a merger forced residents to rotate between two hospitals. The electronic organizers replaced binders and 3- by 5-in. cards.

"Rotating between hospitals meant our residents had more things to remember — phone numbers, notes, navigational issues," Lester says. Now they carry everything they need — a phone directory, a stopwatch, a notebook, reminder notes — in the breast pocket of their white jackets.

The program is so successful that other doctors are agitating for PalmPilots of their own. Over time, Lester plans to integrate the PalmPilots into the network so residents can retrieve patient and lab records while making rounds.

The new devices inevitably bring new support and training issues. "We had to teach people to back up [their data] on the PC in the medical library," Lester says. "They'd let their PalmPilots get too full and then when they changed batteries, they'd lose some data."

"Handhelds like PalmPilots and Windows CE devices are improving general productivity gains on small, inexpensive, easy-to-use and very intuitive devices," says Randal Giusto, an IDC analyst. "They're also filling a ruggedized space and increasingly being used among remote workers and people on their feet."

Hertz Corp. in Park Ridge, N.J., features a truly modern array of undesktop devices: loaded PCs for knowledge workers, dumb terminals at the counter, remote radio devices in 600 locations and more than 8,000 Rockwell Automotive NeverLost directional displays in the cars.

"We're always evaluating new technologies for different business applications," says David Logan, a Hertz IS director. "Our ultimate return on investment is higher customer satisfaction."

THE FUTURE

Handhelds will continue to get smarter and may transition into network nodes. Microsoft Corp.'s Outlook 98 organizer, for example, recently received messaging, phone and E-mail capabilities.

"In the next five years, PalmPilots will become a true tool in the enterprise, although they won't replace any specific device," Giusto says.

PCs will hardly wither. True, worldwide market growth of the PC has dipped. IDC predicts domestic shipments will slow from 19% growth last year to 15.4% this year. But lower costs are making PCs more attractive as terminal replacements and to small businesses and home users.

PCs? NCs? Handhelds? Lester recommends IS leaders turn a deaf ear to the hype and instead focus on business needs. "Forget about the technology and concentrate on workflow," he says. "Once you figure out where the waste is, what the needs are, then it's time to look to technology." □

Radcliff is a freelance writer in Northern California. Her Internet address is derad@aol.com.

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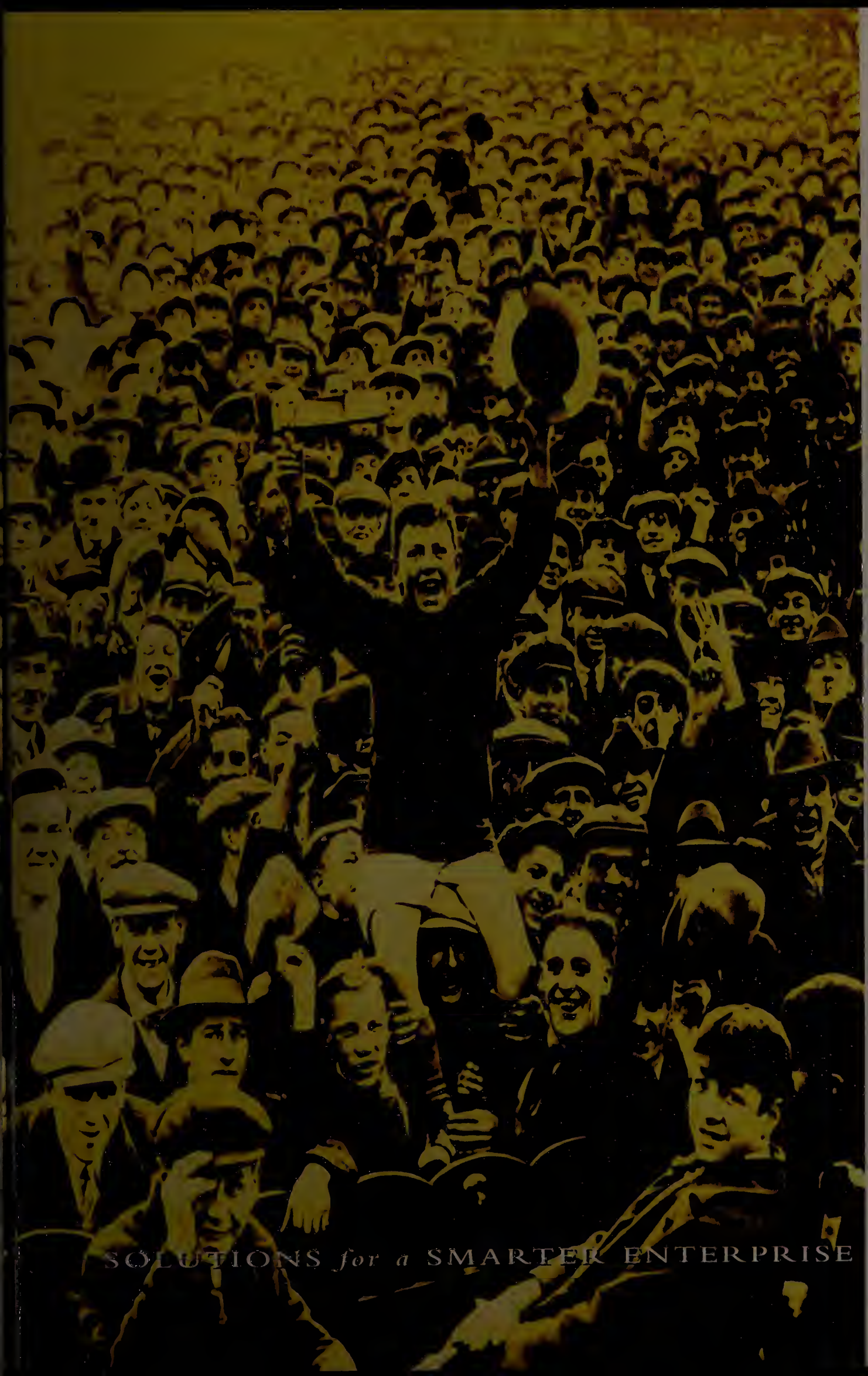

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TERMS OF IMPORTANCE

CONTINUED FROM PAGE 90

JAVA NETWORK COMPUTER
"It is one of the poles in the [network computer] spectrum. It is a device that locally executes applications developed and written in Java."
— Kleynhans

"I don't think it gains a lot of importance until we get past the year 2000. It only becomes important once companies start to develop operational applications in Java, and that is not happening immediately. Today they are just the high end of the [network computer] space. Why would you buy in to that high end when we don't really know what you are going to need until you actually start developing some real applications? You don't know what those devices need to look like, and chances are you are going to end up having to throw out what you buy today when you finally get to the reality in a few years." *— Kleynhans*

"Minimal impact. Because the Windows terminals will offer light Java for doing user interface work and because Microsoft from the high-end is adding manageability and Java capabilities to Windows. This middle market is being squeezed from both ends."
— MacDonald

Selling change

POST-PC POLITICS

WHEN JOE GREULICH began piloting a change from PCs to IBM Network Stations in the call center at Roberts Express, Inc., he knew he was dealing with a lot more than hardware and software; he was messing with users' heads.

"I'm bringing new technologies together with a new hardware mix to attack the mainstream of their job," says Greulich, MIS director at Roberts in Akron, Ohio. "I'm rearranging what's essential. I'm going at the main thread of what they do and reorganizing it."

Information systems managers who are driving changes from PCs to newfangled devices such as network computers and Windows terminals say the politics are at least as complex as the technology. They've got to sell it to users who see any change to the desktop as a threat to their personal space. They need top executives to buy in, but they don't want to raise expectations beyond what they can deliver. They've got to keep the changes under control so they don't move further or faster than they should.

WOOING USERS

Today there are lots of options for reorganizing the desktop, from pure, Java-specific network computers such as Sun Microsystems, Inc.'s JavaStation to thin-client devices such as those from Wyse Technology, Inc., Network Computing Devices, Inc. (NCD) and IBM. The thin-client devices can act like graphical user interface (GUI) Windows terminals, plain-text Unix terminals or both, depending on the network's configuration. Recently, Wintel vendors have been fighting off network computers with desktop management options such as Microsoft Corp.'s Zero Administration Kit for Windows, which lets IS managers lock down desktop PCs by limiting user access to system files and software.

But whatever the option, users are where the mouse hits the mouse pad. They feel the pain of change, and they require the most TLC. "It's definitely worse for users in the first stage," says Tom Austin, a vice president and research director at consultancy Gartner Group, Inc. in Stamford, Conn.

The best strategy, he says, is to accompany the change with a clear benefit, such as a new application that enables users to do their jobs better.

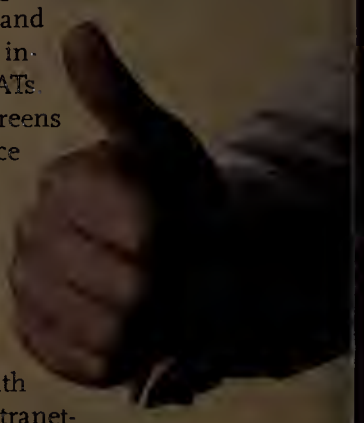
That's what Greulich did. At Roberts Express, an emergency freight shipper, the network computers are targeted at customer assistance teams (CAT) in the call center that arrange and monitor deliveries. The CATs are so good at their jobs that they hit a 15-minute window on pickup and delivery 96% of the time.

Greulich wants to improve that record by pushing GUI-based information to the CATs rather than requiring them to pull it from the text-based Unix applications they use now. To do that, he's overhauling their on-screen environment, but he's selling the changes rather than dictating them. "I admit I'm selling," he says. "These folks are the car owners. I'm trying to make them want a new car."

Like many salespeople, Greulich appeals to pride. "I say, 'Let's learn these new things and move into a new technology that will help you do your job at a higher level,' " he says.

He's taking it slowly. In September, he started 10 employees (two of the 15 CATs) on IBM Winframe Citrix clients — thin clients with Windows on the server — with 20-in. screens to replace 386s and 486s with 14-in. screens. The users noticed only the bigger screen and the speed of a 200-MHz Pentium server. "They thought it was very cool," Greulich says. But there was no on-time improvement.

In December, Greulich moved on to phase two, from Windows to intranet-based Java. He changed the main text-based call center tracking application to a color, GUI-based screen with five fixed applications that run simultaneously, including one that monitors shipments and pushes status information to CATs. (It combines screens that agents once had to pull up.) Deciding the PC applications were extraneous to the job, Greulich replaced them with more limited intranet-based alternatives.



Phase two was a harder sell. Greulich stressed the new technology the CATs were getting vs. the old technology they were giving up. "We were telling folks, 'Don't be afraid to move away from Microsoft; it's old, passe. We're jumping to the same technology your kids are using on the Internet.' That lights up our folks," he says.

He also paid attention to their complaints. For example, CAT members said an electronic bulletin board that had been on the PCs was very important, so Greulich found a way to incor-

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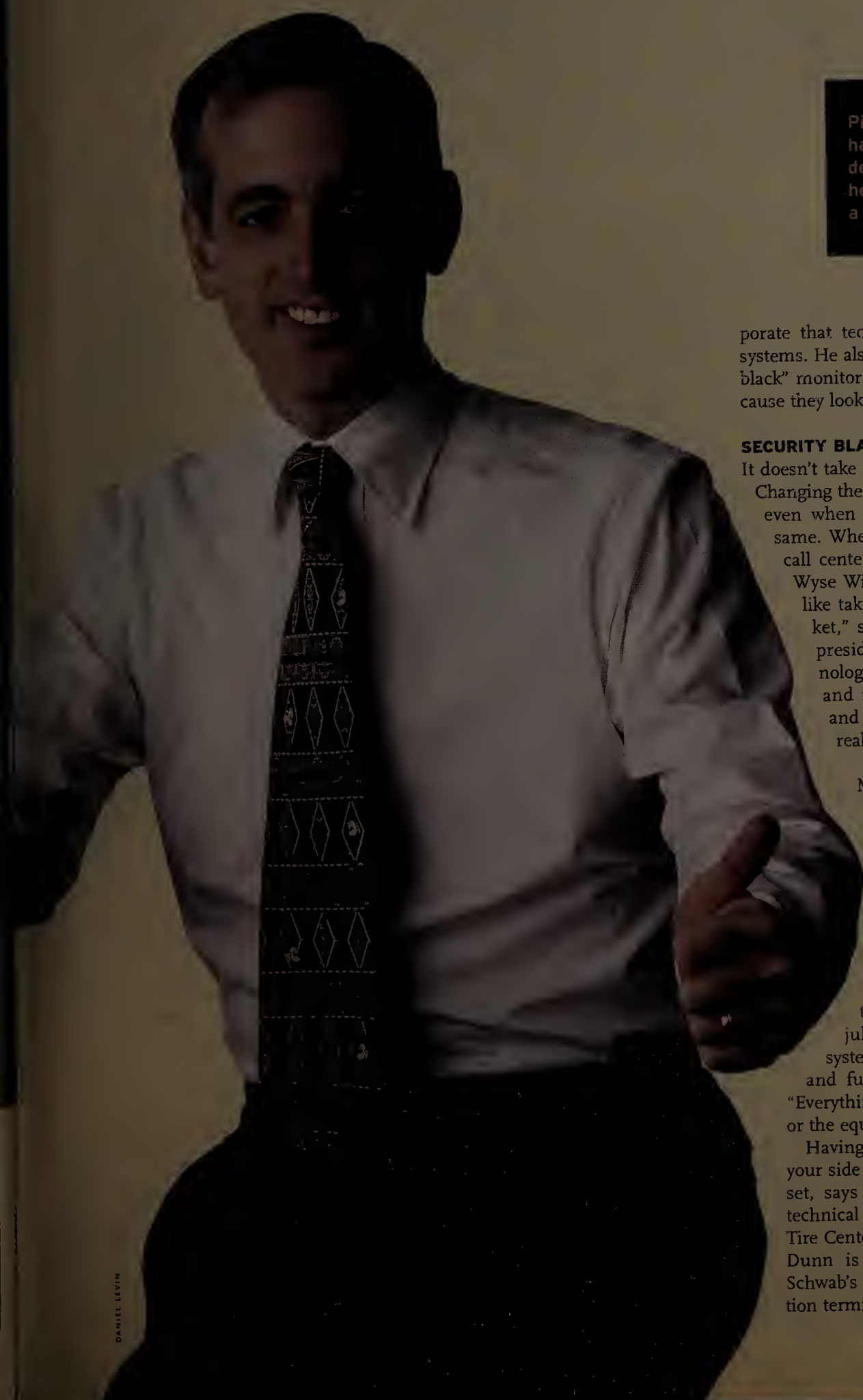
HEY, THAT'S MY DESKTOP!

Users and executives can get touchy when you replace PCs with newer devices

By Kathleen Melymuka



DANIEL LEVIN

Pitchman: When Joe Greulich had to drive a change on the desktop at Roberts Express, he had to employ the skills of a salesman with end users

porate that technology into their new systems. He also gave the CATs "stealth-black" monitors and keyboards just because they looked cool.

SECURITY BLANKET

It doesn't take much to shake up users. Changing the desktop can be traumatic even when applications remain the same. When Unitel Corp. switched call center operators from PCs to Wyse Winterms in 1996, "It was like taking away a security blanket," says Mike Crisafulli, vice president of information technology. "They had a real warm and fuzzy with their PCs . . . and taking that away had a real cultural impact," he says.

But the trauma for the McLean, Va., teleservices company was short-lived. "Once they realized they had the same power and fewer problems, a lot of it went away very quickly," says MIS director Victor Jones. But Jones eased the transition by responding to user objections with CD jukeboxes and large-drive systems to simulate the storage and function of their old PCs. "Everything they wanted, they got, or the equivalent of it," Jones says.

Having an influential user on your side can be a huge political asset, says Paul Dunn, manager of technical services at Les Schwab Tire Centers, Inc. in Prineville, Ore. Dunn is evaluating a change in Schwab's 285 stores from fixed-function terminals running off AS/400s

Post-PC politics, page 94

TERMS OF IMPORTANCE

MANAGED PC

"They are PCs that have hardware instrumentation that allows them to be administered centrally. Generally, it refers to PCs that match the Wired for Management specification from Intel." — *Kleynhans*

"It is the evolution of the PC. The NetPC is basically meaningless. What you will see is that most enterprise-caliber PCs will be manageable PCs, where they are built with management in mind, and that includes electronic/upgradable ROM, remote power on and off and built-in desktop management functionality. The concept of a managed PC does not stop at the hardware. Policies and procedures are a necessary part of a managed PC environment. Most people do a poor job of managing what they have. The market will split. You will have terminals, and you will have what looks like a more traditional, managed PC. The NetPC and the Java computer at the high end get sucked into the managed PC, and the low-end Java lightweight stuff gets sucked into the terminal model." — *MacDonald*

"It gives you a single standard for pulling back the administration, at least at the hardware level, of your PC population or managing the configuration of your PC hardware fleet in a central place." — Kleynhans

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POST-PC POLITICS

CONTINUED FROM PAGE 93

to IBM network computers. "There are a couple of key users we will want to demonstrate it to and get their feedback," he says. "If you get them on your side, they do the pushing."

SECOND-CLASS CITIZENS

Changing all the desktops in a department can be a delicate matter, but changing some and not others can get downright ugly. "PCs on a desk is a religious issue," says Rikki Kirzner, a director at Meta Group, Inc., a consultancy in Stamford, Conn. "A lot of people are adamant that they are not going to give it up."

It's useful to leave a little negotiating space. Rod Crownover, network services manager at AT&T Wireless Services in Sacramento, Calif., has replaced about 400 PCs with Wyse Winterm network computers in remote offices, sales offices and stores. When people complain that they need their floppy disk drives, he can usually satisfy them with server-based storage, he says. "But if someone is adamant that they need a floppy to take something home, we will fall back to a PC," he says. That's been necessary only twice so far.

The small number who won't go along supports Austin's suspicion that many users would welcome simpler technology if they could be convinced that it isn't linked to a drop in status. "We think a lot of people out there are sick and tired of having to deal with technology," he says, "but few are willing to say that."

Austin says users need to be convinced that the simplicity of the network computer is a step forward, not a step back. "When is the last time they cleaned their fuel injector in their car?" he asks. "You could say that fooling around with PCs in many ways is akin to being a gear-head."

BEYOND USERS

Selling network computers to senior management was much easier when they cost half as much as PCs. Now, executives need to be educated in total cost of ownership. "The most important thing is to show value," says Rob Carter, chief technology officer at FDX Corp., the holding company for Federal Express, which is piloting various thin clients to replace about 45,000 mainframe terminals in package-tracking stations worldwide.

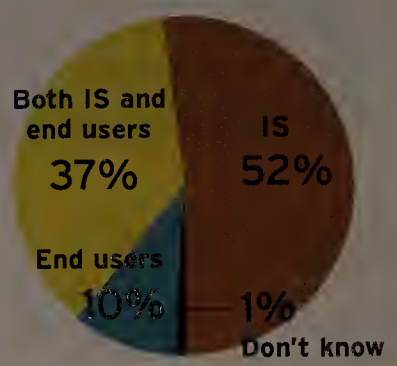
But beware of telling executives more than they need — or want — to know. "Educating top management was the hardest part," says Travis Singleton, manager of technology development at Prime Equipment, Inc., a Houston supplier of heavy tools and equipment. Singleton, who was considering replacing point-of-sale PCs with IBM Network Stations in 160 rental sites, spent four grueling sessions trying to persuade the brass.

At three of those meetings, he tried to explain the technology. "I got shot down repeatedly because they didn't know what I was talking about," he says. Then he realized he needed to show managers the cost difference. "I cannot tell you how fast I got that [purchase order] signed," he says.

All Greulich had to sell was the pilot. "If the applications pan out, the business case is compelling," he says. If not, the only risk is the cost of 10 network computers.

IS DRIVES MOST DESKTOP DECISIONS

Are the decisions about your organization's desktop systems driven by IS or by the end users' departments?



Source: *Computerworld* survey of 150 IS managers, with an average of 1,710 PCs installed at their companies

Probably the worst political mistake you can make with users or managers is to raise expectations you can't meet. "It's got to do what it's billed to do," Dunn says.

FALSE EXPECTATIONS

At Recreational Equipment, Inc., a 50-store sporting goods retailer in Kent, Wash., executives who estimated the initial savings in replacing a range of PCs and terminals with NCD Exploras didn't count on the subsequent PC price dive. "There were definitely some false expectations," says network technology manager John Wade. "I'm still answering executives' questions about that."

Initially, executives were so thrilled about the projected savings that the project took on a life of its own, moving too far, too fast. "Senior management wanted to see those savings realized," Wade says. "I would have taken it a little slower and waited for some of the software to mature before we got into it."

At the other end of the spectrum is Greulich, who is keeping tight control and won't commit to the desktop change until his pilot proves the business benefits. For now, his executives have to wait. "They just have to bear with me," he says. "They're gritting their teeth hoping I'll get over it or hoping the payback will be there."

So is Greulich, because the bottom line of desktop change is business improvement. "I'm at a pretty lonely place right now," he says as he awaits the results of the pilot. "But I'm pretty confident." □

Melymuka is Computerworld*'s senior editor, management.*

Politics scandalous

If you don't believe desktop change is a political issue, just follow these 10 guidelines and see what happens.

Don't pussyfoot around with tests and pilot projects; jump in head-first.

Don't discuss it with users. Just announce it like any other equipment change.

Don't coddle users. If they complain that the desktop is their personal space, tell them to get a life.

Ignore their concerns. If they think they need a CD, a disk drive or storage, tell them to forget about it.

Be firm. If you make one exception, the whole thing falls apart.

The sooner you make all the changes, the sooner they'll get used to them, so move as fast as possible.

Don't bring any users into the loop. They may try to sabotage you.

Give senior executives so much technical detail their eyes glaze over. That will make them think you know what you're doing.

Promise executives whatever it takes to get their OK. Who's going to remember?

TERMS OF IMPORTANCE

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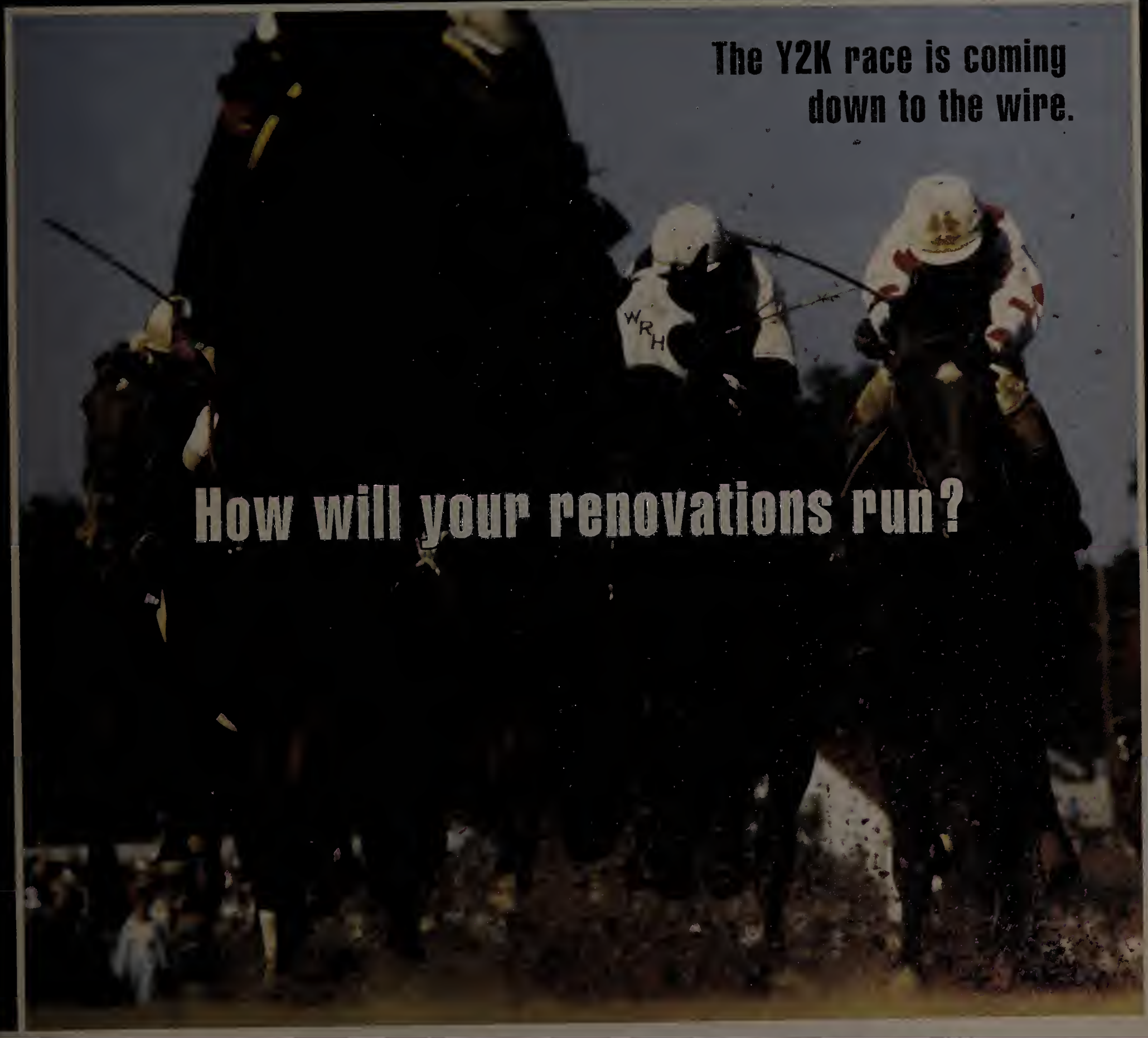
"[It is] often associated with a desktop device that requires very little maintenance on location. Responding to the threat of network computers, Microsoft's Zero Administration for Windows initiative is aimed at reducing the total cost of ownership [TCO] of Windows-based PCs by increasing manageability. Other vendors are also using "zero administration" as a buzz phrase to associate TCO reduction with their products." — *Mahony*

"It is an initiative from Microsoft that encompasses a number of technologies that Microsoft is working on to simplify the setup and ongoing management of workstations by centralizing the specific configuration details for users, workstations and applications."

— *Kleynhans*

"With cost-reduction at the forefront of issues, zero administration at the client has become one of the key aspects of TCO. Centralized manageability and control are being demanded by administrators within organizations that are looking for an ideal computing environment in which all clients can be managed from a remote location." — *Mahony*

Terms of importance, page 98



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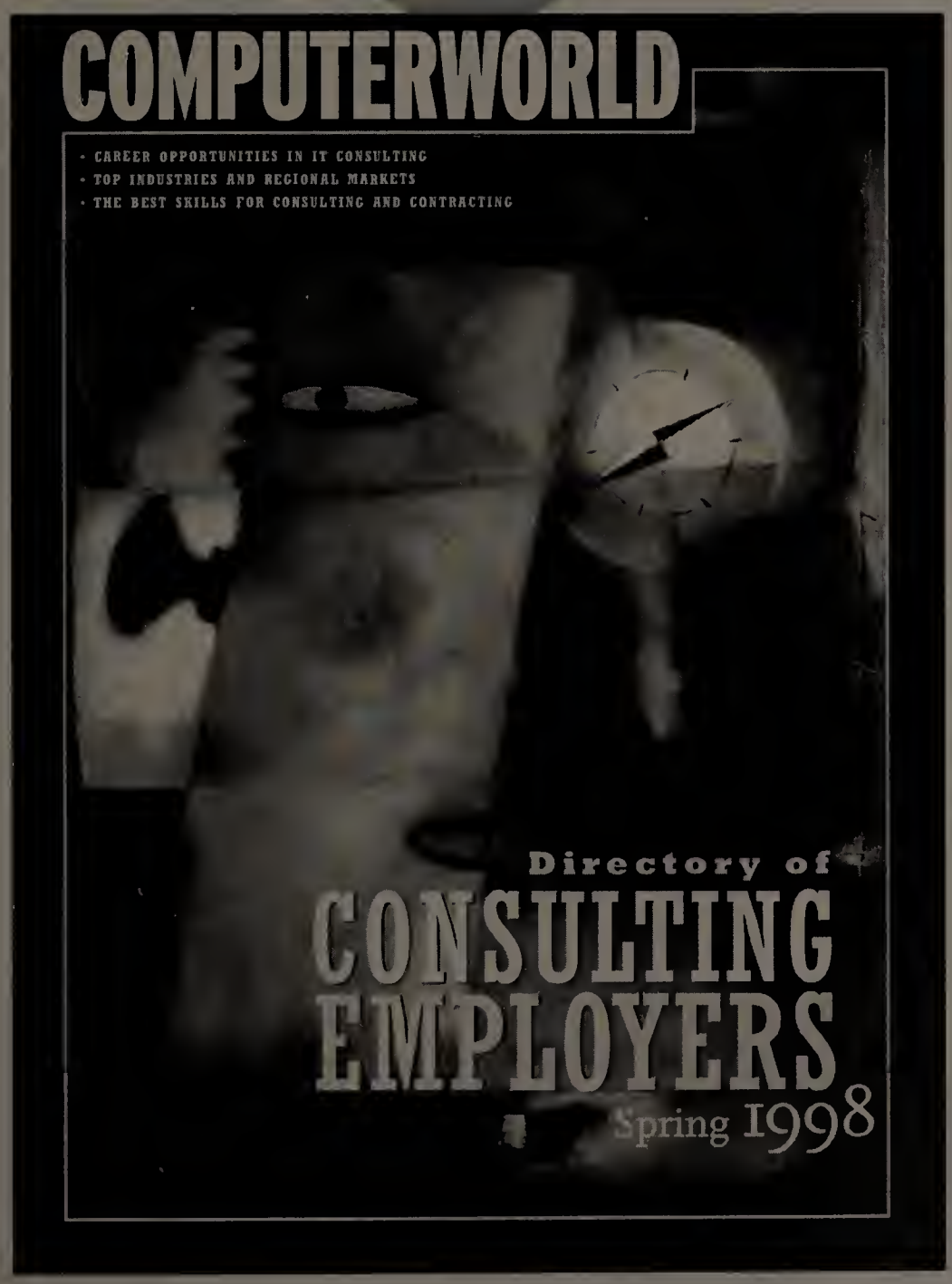

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Career impacts

THE SHAPE OF SKILLS

TERMS OF IMPORTANCE

ZERO ADMINISTRATION KIT
"It is a stopgap measure that exists today. The good news is that it does exist. The bad news is that you could have done it anyway. This is not new functionality with [Windows] NT or 95. It is stuff that people did not use anyway because it is so complex. It is canned routines, policies and procedures."
— *MacDonald*

MULTIUSER NT
"Microsoft's Windows Terminal Server, once known as Hydra, and Citrix's Picasso, form the back-end Windows NT server that makes the Windows terminals possible." — *MacDonald*

John Ho
Reel ant
med c g
desk with
help des w
network t ch

CHRIS HARTLOVE

Desktop support needs will vary considerably. Small companies may sit tight for a bit. Larger firms are embracing Windows NT. And nearly everyone wants networking talent.

TO COME

By Steve Alexander

CHARLIE AULETTO AT CBS WORLDWIDE, Inc. wants PCs to become mini-film-editing studios.

Roger Finks at Ralston Purina Co. wants Windows NT to give his desktops higher reliability.

And Brian Garavuso at South Seas Resorts Co. doesn't foresee much change at the desktop at all.

The shape of the desktop of the future varies quite a bit depending on the ambitions of the company involved. But most information technology managers agree that additional networking and World Wide Web skills will be needed to support desktop PCs about two years from now. IT workers also will need to know more about Windows NT.

The average IT staff may not have to know much about network computers, however. Those needs may be limited to larger companies that have thousands of PCs to manage. Midsize and smaller companies say their desktop machines probably won't change much over the next two years. The reason: Few new major applications are likely to be rolled out during that time, and corporations are busy using the technology they already have.

Those who foresee a more complex desktop machine are prepared to train most of the additional support people required. Many companies are finding it too costly and time-consuming to hire needed IT professionals in the current job market. Other companies are outsourcing. They say the high rate of technological change on the desktop makes it unattractive to try to constantly find and train support people.

For some companies, the year 2000 code problem appears to be giving the desktop a technological push. Partly in response to code-conversion issues and partly out of business necessity, the Port Authority of New York and New Jersey plans to replace 1,000 of its roughly 3,500 desktop PCs. The Port Authority operates transportation and commerce facilities that include John F. Kennedy Airport and the World Trade Center. It will replace older 386- and 486-based desktop machines with new PCs that range in speed from 266 to 300 MHz and have year-2000 compliant BIOS.

"The business need is driving it, and the millennium is helping with the momentum," says Karen Antion, chief technology officer at the Manhattan-based Port Authority.

NAY TO THE NETWORK COMPUTER

THE DESKTOP TECHNOLOGY THAT GETS FEW VOTES AMONG IT PROFESSIONALS IS THE NETWORK COMPUTER.

"We looked at the [network computer], but it's not what we need for the future," says Al Garcia, MIS director of The Capstone Group, a management consulting company in San Jose, Calif. "I didn't see any companies our size doing anything with it, and much bigger companies that are deploying it are having difficulties." His company's IT outsourcing company also lacked network computer expertise, and the cost of training was considered too high compared with the relatively small savings on the network computer.

Terry Davis isn't ready for network computers, either. Davis, director of enterprise architecture and telecommunications at Coors Brewing Co. in Golden, Colo., says only about 5% of his company's 3,200 desktop PCs will be replaced with network computers in the next two years. "With the relatively low price we pay for PCs today, the question is 'How can we harness PCs better?' rather than 'Should we be going to a dumb device?' " Davis says.

LICENSED TO THRILL

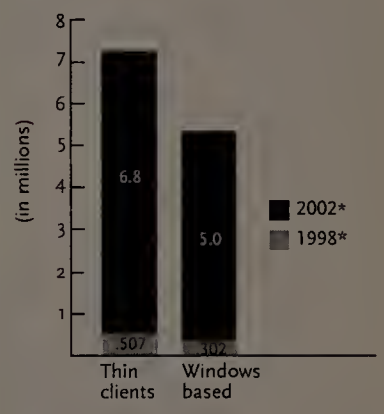
TO CUT DOWN ON DEMANDS FOR DESKTOP SUPPORT, SOME INFORMATION SYSTEMS MANAGERS SAY THEY ARE FINDING IT NECESSARY TO PREVENT USERS FROM PUTTING UNAUTHORIZED APPLICATIONS ON THEIR DESKTOP PCS.

"End users will lose a lot of their ability to make changes to their machines, because that's where IT PC support gets most of its problems," says Tom Byrnes, chief technology officer at American Digital Network, Inc., a network outsourcing company in San Diego.

The shape of skills, page 100

STATS & STUFF

According to IDC projections, Windows terminals will dominate the thin-client sector in the future:



Source: International Data Corp. *Projected

Citrix ICA-capable thin clients accounted for 48.4% of all thin-client shipments last year. Java-capable thin clients totaled 17% of the market last year, and browser-enabled thin clients represented 26.2% of the market.

Source: Zona Research, Inc.

Only 15% of 137 senior-level IT buyers and decision-makers surveyed said they plan to deploy thin-client architectures within the next three years. Of the 117 respondents not planning to deploy thin clients, 44% said this was because thin clients aren't a PC. Another 44% said it was a bandwidth and network issue.

Source: Zona Research, Inc

Proactively managing an existing PC environment can result in annual cost savings of 12% per desktop. The managed PC model can be achieved by strictly managing access to client software and by using procedures such as automated inventory, software distribution and remote control diagnostic tools.

The SHAPE of SKILLS TO COME

CONTINUED FROM PAGE 99

"Windows 98 and Windows NT will make it easy to prevent users from making changes to their desktops, except for ergonomic changes like fonts and colors. What will drive it is the cost of PC administration. It's not just the money, it's the wasted time and loss of productivity," Byrnes says.

Garcia agrees. "Eight months ago, we had people with all kinds of screen savers on their PCs, and they were causing conflicts with other applications. Things were kind of getting crazy — PCs would not start up normally, and that caused confusion among the [computer-illiterate] folks. So we established lockdown standards to make our systems more stable."

ALL HAIL NT

THE SHIFT TO WINDOWS NT AT THE DESKTOP HAS MANY ADHERENTS.

"NT is more stable than Windows 95, which seems to lock up a lot," says Finks, IS manager at Ralston Purina's CheckMark Communications, an advertising agency in St. Louis. He says he expects a shift to Windows NT PCs for his company's Windows 95 PCs and Macintoshes within about two years.

HBO & Co.'s Joe Federer advises IS managers to watch the big companies to know which way to jump.

HBO & Co., an Atlanta provider of health care software and services, plans to shift 3,000 desktop machines to Windows NT 5.0 during a two-year project. Expected cost: approximately $250,000. But the process of migrating to NT won't begin until 2000, "when all the bugs have been fixed," says Joe Federer, vice president of IS.

Federer hopes NT will mean that desktop support can be handled by fewer, more highly skilled people. But he says he still has to be convinced. "I've been here 10 years, and I can't tell you one new technology that really let us reduce staff," he says.

His advice to IS managers: Watch the big guys so you know which way to jump. "I always watch companies bigger than us to see where they're going because I figure they can't afford to make a big mistake. When the big companies start backing out or holding off on a desktop technology, we watch," Federer says.

LUST FOR POWER

SOME IS MANAGERS HAVE AMBITIOUS PLANS THAT WILL STRESS DESKTOP PROCESSING POWER.

Antion says one of the most important desktop applications of the next two years will be voice recognition. It will help people who lack strong typing skills use their PCs effectively and could help the IS department sell corporate management on investments in new technology. "I believe voice recognition will help convince managers of the value of technology by personalizing it for them," Antion says.

Davis says he would like to install videoconferencing software at the desktop to help Coors save on travel costs. He says he is also interested in whiteboard applications that let workers interact with documents simultaneously. "In some cases there may be sharing of information rather than actual video, but we're also looking to improve face-to-face interaction. At the pace things are changing, video over the Internet might become usable in two years. But we need improvements in compression algorithms," Davis says.

Auletto, the director of news data systems at CBS in New York, wants an even more elaborate form of desktop video. Rather than force news editors to go to a film-editing room, he says he would like to provide that capability on desktop machines. Desktop video and audio would be below TV broadcast quality, but they would be good enough to make film-editing decisions, he says.

But at South Seas Resorts in Fort Myers, Fla., which operates a hotel chain in the southern part of the state, the company's 600 desktop PCs aren't expected to change much in the next two years. Garavuso, South Seas' vice president of technology, says approximately 50 desktop machines may be replaced with network computers for reception desk applications. But most desktops aren't likely to change.

"There are no issues we're looking to solve in the future that we don't have the solution to now. We're running Lotus Notes and Microsoft Word on the desktop; the rest of our applications, such as hotel reservations, run on the server," Garavuso says.

IN AND OUT

WHAT TO DO WITH DESKTOP SUPPORT IS SOMETHING OF A PUZZLE. SHOULD YOU OUTSOURCE IT OR CHANGE IT BY UPGRADING SKILL LEVELS?

The IT department at Johns Hopkins Medicine, a group of hospitals and outpatient facilities affiliated with Johns Hopkins University in Baltimore, is experimenting with staffing its help desk with a new kind of employee who is a hybrid between a traditional help desk worker and a network technician.

The problem is that today's help desk worker performs a largely clerical function, says Stephanie Reel, vice president for information services at Johns Hopkins Medicine.

"That person reports problems, handles them a little bit, then hands them off to experts. What we need in the not-too-distant future is an experienced person who has maybe 18 months or two years of the experience you acquire as a desktop technician who loads and manages software," Reel says.

Behind the plans for an improved help desk lies an ambitious Johns Hopkins plan to provide more integration at the desktop. Clinical results, data on use of health facilities and financial data "all need to be presented to the user in a way that is familiar, even though the data resides at different locations, in different servers and in different departments. And it needs to be done on the fly, which means we need to create a desktop Web [graphical user interface]," Reel says.

But the Port Authority is considering outsourcing its PC help desk.

"What people look for when they dial the help desk number has changed substantially," Antion says. "The nature of the problems is more complex and diverse. As a result, the ability of help desk people to stay current and our ability to train them and have them interface with service providers is getting more challenging. We'll probably outsource the help desk sometime before the year 2000."

WHAT'S IN IT FOR ME?

FOR THE IT PROFESSIONAL, THE DESKTOP SKILLS YOU SHOULD INVEST IN FOR THE DEMAND TWO YEARS FROM NOW ARE BECOMING CLEAR.

"Strong networking skills, including a good understanding of protocols, operating systems and how security systems establish different levels of access," Byrnes says. "It should be possible to retrain current IT people; most of them are trying to learn networking skills now because that's where the higher-paying jobs are."

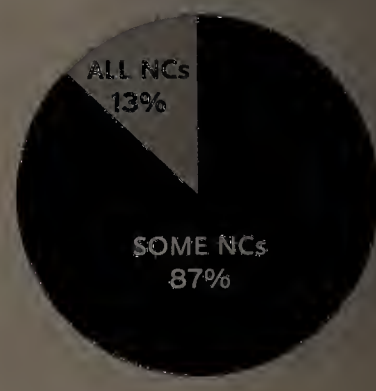
Davis says he'll need "more people who understand PC networking capabilities or how to build network-enabled applications. We're in our infancy in building applications that use browsers, and we don't know how to architect applications to run that way."

There will also be a greater emphasis on supporting custom applications, Davis says. "We will be writing our own applications for sales force automation, decision support and data acquisition on the shop floor or in manufacturing." □

Alexander is a freelance writer in Edina, Minn.

STATS & STUFF

Five-year plan: In a poll of 52 Global 2000 companies using or implementing NC devices, most user sites said they will have some NCs. A few said they will be NC-only sites.



Source: Meta Group, Inc.

80% of 270 respondents said they use or are planning to use network computers to reduce the total cost of ownership (TCO) or cost to use.

Source: International Data Corp.

When asked which brand comes to mind when you think of network computers, 46% of 270 respondents said IBM Network Station. The second most frequently mentioned was Sun's Microsystems, Inc.'s JavaStation.

Source: International Data Corp.

The NetPC can provide up to a 35% reduction in the TCO over other computing clients, even edging out network computers.

SYSTEM	TCO
*Net PC	$6,469
Network computer	$6,547
Windows Terminal	$7,792
Windows 95 System	$9,869

*running Zero Administration Kit for Windows in TaskStation mode

Source: Gartner Group, Inc.

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The 5,000 employees of U S WEST's Information Technologies are the team that provides a full range of telecommunications services including wireline, wireless PCS and data networking to more than 25 million customers in 14 states. Now we need your talent and high-tech knowledge to take us even further. Consider the following immediate opportunities in **Denver, CO, Seattle/Bellevue, WA, Omaha, NE, and Salt Lake City, UT,** site of the 2002 Winter Olympics at which U S WEST is the selected telecommunications sponsor.

Software Systems Engineers

- Requirements analysis, ability to map client requirements to systems and current architecture, design, software project management and interface specification experience required
- Technical and organizational process direction and problem resolution
- Industry experience with GUI design/functionality, C, C++, Java, Perl, client/server, UNIX, Netscape, HTML, Oracle, EC-Lite (CMIP), Sybase, Architel and EDI
- Solid telecommunications experience a plus

Software Developers, Testers, Y2K

- Software development practices, change management, software lifecycle and testing methodologies, large system end-to-end testing, system program testing, loadtest automation and/or regression automation solutions
- Billing programs in mainframe environment
- Industry experience with UNIX/NT, JCL, IMS, COBOL I/II, DB2, MQ, PL/SQL, TSO, ISPF, Control M

We are also looking for:

Oracle Developers, Oracle DBAs, Oracle System Administrators
Systems Administrators, UNIX Systems Administrators for Call Center Architectures
Software Development Project Managers
Data Warehousing/Architects • Telecommunications Business Analysts
System Designers/Architects

Here, progressive thinking isn't limited to technology. We offer an excellent compensation and benefits package along with a flexible work environment. For immediate consideration, please indicate Job Code COMPW98, and send your resume to: U S WEST Communications, Staffing, 1801 California St., Ste. 295, Denver, CO 80202, or fax to: (303) 965-9940. Visit our Web site: www.uswest.com

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A WORLD OF OPPORTUNITY.

Your technology career may have just begun. Or you may be an experienced software professional. What you need is a company that offers you diverse opportunities in technology services and project management, while keeping you from getting technically obsolete. That company is Mastech!

Mastech represents global opportunity with a fast-track company that promotes opportunities in our consulting practice ranging from Y2K project management to client server based system development. If you have proven IT skills, and are interested in a challenging position working to support some of the world's largest organizations, we may have just the opportunity for you.

CLIENT SERVER
- Unix System Admin
- Object Oriented Devel
- NT System Admin

Yr 2000 SERVICES
- Project Managers
- Prog Analyst Cobol, Database

INTERNET/INTRANET
- Java HTML
- EDI

ERP
- BAAN
- SAP
- Oracle Apps
- JD Edwards
- PeopleSoft

Join one of the industry leaders in IT Services with revenues over $190 million. Mastech has been recognized by Inc. magazine as one of the fastest-growing privately held companies four times. Now a public entity, our client base spans over 400 companies including EDS, KPMG, IBM, Ernst & Young and Cap Gemini. who rely on our expertise to achieve their goals. We are looking for dynamic individuals to play an integral role in supporting the growth of our consulting efforts.

Mastech provides a compensation plan structured to encourage and reward top performers and a full benefits program. Please fax your resume and salary history to: Mastech Corporation, Attn: National Recruitment, Fax: (412) 490-9861; Ph: (412) 490-9191. E-mail: ExploreTheWorld@mastech.com. EOE.

MASTECH

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Tivoli and You...

A Successful Partnership

Tivoli has grown to become a leader in the industry because of our innovative practices and our dedicated employees. We have a strong commitment to both our employees and the marketplace and believe the best way to become successful is to invest in the right people, the right products, and the right technology that allow you to be your best. Right now, we have the following opportunities at our state-of-the-art facility in **Austin, TX:**

- LOTUS NOTES ADMINISTRATOR
- UNIX ADMINISTRATOR
- IT APPLICATIONS DEVELOPER
- NT ADMINISTRATOR
- WEB AND LOTUS NOTES MANAGER
- MANAGER, DATABASE ADMINISTRATOR
- DATABASE ADMINISTRATOR
- MANAGER, INTERNAL APPLICATIONS
- SAP/ABAP DEVELOPER
- SAP ADMINISTRATOR

Tivoli is committed to your success! For immediate consideration, please forward your resume to: **Samantha Silver, TIVOLI SYSTEMS, Inc., 9442 Capital of Texas Hwy., North, Suite 500, Austin, TX 78759. Fax: 512-418-4151. Ph: 512-436-8404. E-mail: samantha.silver@tivoli.com** An equal opportunity employer, we value the diversity of our workplace.

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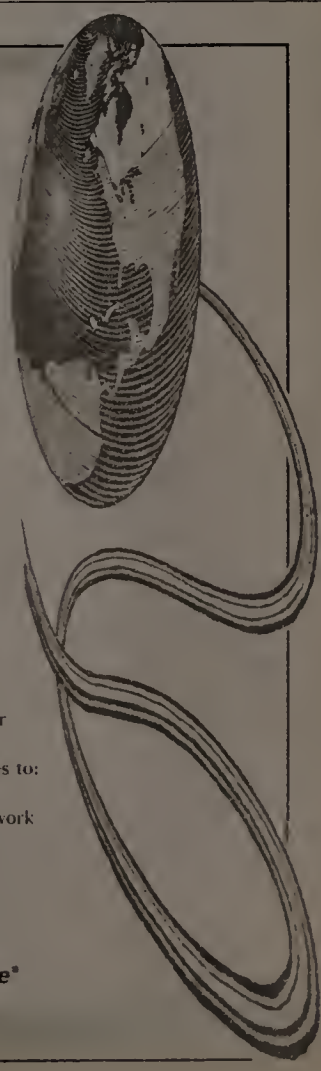
Tivoli

THE INDUSTRY HAS EVOLVED. SHOULDN'T YOUR CAREER?



At CNA, one of the nation's top 10 insurance groups, we think it should. For over 100 years, we have endeavored to become an industry leader while providing an environment conducive to employee growth and satisfaction. Our results...an aggressive workplace where employees face new challenges through consistent evolution and ever-increasing levels of responsibility. We're ready for the next step, are you?

SENIOR EDP AUDITOR

We are actively seeking individuals with 5 + years technical auditing and/or systems experience. You will qualify with an IS Audit or systems programming background and a desire for a new and challenging experience auditing in a state-of-the-art systems environment.

CNA offers excellent benefits including: medical/dental, vision and 401(k). For consideration, please forward your resume to: CNA, CNA Plaza, Dept. 98118, P.O. Box V.V., Chicago, IL 60685 or FAX: 312-822-7565. E-mail resumes to: resumes@cna.com, ATTN: Dept. 98118. CNA is an Equal Opportunity Employer M/F/D/V committed to a diverse work culture. Visit our website at www.cna.com/careers/.

CNA

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Software Engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Gupta SQL, SQL Base, Crystal Reports and C. Requirements: Bachelor's degree in computer science or related field, two years experience as a software engineer, and knowledge of Gupta SQL, SQL Base, Crystal Reports and C. Salary: $56,000/year. Working conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week. Apply: PA Job Center, 1051 Morell-Box 868, Connellsville, PA 15425. Job No. 5017598.

Software Engineer. Design & develop client/server & networking applications. B.S. or equiv. in Computer Engineering, Electronic Engineering or related field. 1 yr. software engineer exp., including exp. in design, specification, code development & testing of configurable telecommunications mgmt. server & networking applications; analysis, configuration & implementation of stacks, compilers & managed-object interfaces. $50,000/yr. Woodland Hills, CA job/interview site. Send resume to: Star Marcus, Vertel Corp., 21300 Victory Blvd., #1200, Woodland Hills, CA. 91367. Job Code 627CO

Software Engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Progress 8.0, Progress 4GL, Unix and C. Requirements: Bachelor's degree in computer science or related field, two years experience as a software engineer, and knowledge of Progress 8.0, Progress 4GL, Unix and C. Salary: $56,000/year. Working conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week. Apply: PA Job Center, 345 Fifth Avenue, McKeesport, PA 15132. Job No. 9081308.

Computer Consultant/Programmer (Chicago): Analyze business procedures and problems of clients throughout the U.S. Analyze, plan, develop, test and implement business and financial systems software applications to address client needs. In formulating technical solutions, use the following hardware and software: IBM ES9000, IBM Compatible PCs, COBOL II, CICS, DB2, VSAM, MVS/ESA, XPEDITER, JCL, INTERTEST, MF-REVOLVE AND SYSTEM VISION 2000. Plan and prepare technical reports, memoranda and instructional materials for client. Assist in client transition to new system. Large percentage of time may be spent performing consulting services at client sites in various geographical locations. 40 hrs/wk, 8:00am-4:30pm, $43,500.00/yr. Must have a Bachelors degree in Computer Science or a related field (may include engineering, math, physics, chemistry or MIS) with 2 yrs exp in the job offered or 2 yrs exp as a computer software development specialist (may include programmer, programmer analyst, systems analyst, software engineer or consultant). Through education or work experience, must have acquired software development skills in each of the following: 1) CICS; 2) COBOL; 3) DB2; 4) VSAM; 5) JCL; 6) SYSTEM VISION 2000. Must be willing to travel to client sites throughout the U.S. 25-50% of the time. Must have proof of legal authority to work permanently in the US. Send resume/ltr in dupl to: Illinois Dept of Employment Security, 401 South State Street - 7 North, Chicago, IL 60605, Attn: Joan Sykstus, Ref# V-IL 18012-S. An employer paid Ad. No Calls.

PROGRAMMER/ANALYST needed for a North Charleston, S.C. provider of software tools and service to program utilities and application to provide data integration for Product Data Management Systems using STEP (Standard of Exchange of Product Model Data) protocols. Develop STEP protocols using FEA. Develop and implement GUIs using OSF/Motif, PDE/Lib, C and C++, develop distributed objects using HP orb plus, C++ and CORBA standard; develop internet applications using CGI scripting. PERL, Java and Javascript; develop data translation applications using C and embedded SQL. Must have B.S. in Computer Science or Engineering. Must have 2 year experience in job described or 2 years experience in programming C, C++ and SQL; using FEA and STEP; and developing GUIs in C++. Experience must be after degree but can be gained concurrently. In lieu of experience, applicant may qualify with a masters degree in Computer Science or Engineering with a graduate course or research project requiring programming in C, C++ and SQL; using FEA and STEP, and developing GUIs. Work Schedule: 40 hours/week, 8am-6pm, Monday-Friday. Salary $50,616.00 per year. Must have proof of legal authority to work permanently in the U.S. Applicants report to or send 2 resumes to Ms. Regina D. Ratterree, E&T Technical Services, SCESC-SC2000716, P.O. Box 1406, Columbia, SC 29202, Job Order # SC2000716.

Engineers-Software Engineers: conduct research & develop, test & maintain programs, which comprise a portion of a system product or future products. Exp. &/or background in the following areas (not all req): C, C++, JAVA, distributed computing, object-oriented, DSP programming languages, AIX, UNIX, Lotus Notes, Windows NT, OS.2 & Microsoft Windows 3.1/95 operating systems. Req: MS in CS/EE/Comp Eng + 1 or 2 yrs exp (or equivalent) depend on position or B.S. + 3-5 yrs exp depend on position in Austin, TX, San Jose, CA, Hawthorne, NY, Yorktown Heights, NY or New York, NY. Competitive salary. Please send resume w/clipping of ad to: IBM Corporation, Technical Recruiting, Job Code AH104, P.O. Box 218, Yorktown Heights, NY 10598. An equal opportunity employer.

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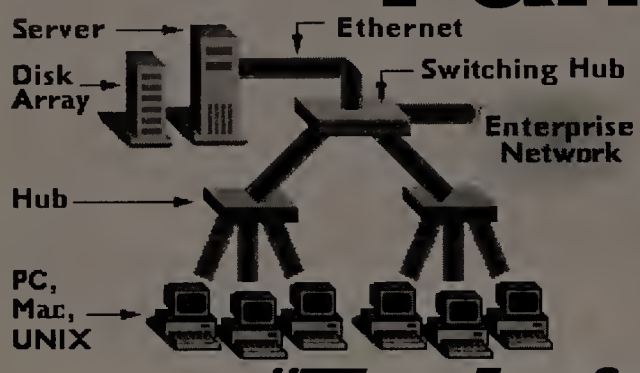

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Panasonic Corporate Systems Sales Company (PCSSC), dealing with the sales of Computer Products, Office Products, and Communication Systems to Fortune 1000 companies, has a challenging opportunity for a Product Manager who is interested in being part of a "Global Technology Giant".

Responsibilities include application development, sales, and customer support for VNS (video network server) software business. The successful candidate must be able to develop & implement the marketing strategy to achieve the financial, business and market share goals. Individual will also be responsible for project management for major account endusers & authorized system integrators on UNIX (Sun/Solaris) platform, as well as development of project plans, proposals & business plans.

BSEE or BSCS degree, 2-3 years field experience in network based applications, and Solaris/UNIX and Novell administration and networking experience are essential. Design, installation, operation, and management of local and wide-area networks are highly desirable. Excellent written, verbal and presentation skills are a must.

Our commitment to you is a rewarding compensation package along with an environment that encourages professional growth. Send your resume to: **Matsushita Electric Corporation of America, Dept. PM-JL, One Panasonic Way, Panazip 3C-6, Secaucus, NJ 07094; Fax: (201) 392-6007. E-mail: laboscoj@panasonic.com** For a complete listing of our open positions, please visit our website at www.panasonic.com. EOE M/F/D/V. Pre-employment drug testing required.

Matsushita Electric Corporation of America

SOFTWARE DEVELOPER. Responsible for design, development and maintenance of modeling tools (Analysis and Design) for multiplatform CASE environment. Develop the forward and reverse engineering tools to translate logical models into relational models. Define and implement the informational models for object oriented analysis and design of business applications. Duties entail development of compilers and reengineering tools; development and implementation of graphical interfaces for OS/2 and Windows NT; object oriented design and programming using C++ for Windows NT and OS/2. Requires: Bachelor's in Computer Science, Math, or Engineering. 3 yrs. exp. in the job offered or 3 yrs. exp. as a Project Leader, Software Engineer, or Systems Analyst. Experience must involve development of compilers and reengineering tools; development and implementation of graphical interfaces for OS/2 and Windows NT; using C++ for Windows NT and OS/2. 40 hr wk., 8:30 am - 5:30 pm, Mon.-Fri. $55,550/yr. Overtime N/A. Overtime $N/A. Job located in Cary, NC. All resumes must include applicant's: Social Security #; job order # NC5701102; and DOT code 030.062-010. Apply to nearest Job Service office or submit resume to: Job Service, 742-F East Chatham Street, Cary, NC 27511.

Senior Systems Engineer- Create qualification test plan and implement qualification test for Symmetrix Integrated Cached Disk Array. Work on multiple UNIX Operating Systems and hardware platforms such as SUN, AIX, HP, DEC, NCR, SGI, SIEMENS, PYRAMID, and SEQUENT. Actively work very closely with software developers who require to have instant feedback on any software and hardware issues. Required to do advanced analysis of test results to create the immediate feedback influencing the design of the systems. Requirements include a Master of Science Degree in Computer Science, or related engineering field, or equivalent; with at least five years of experience in the job offered or the related field of development in C language for test and qualification applications for complicated systems. Experience must include the use of advanced data analysis software tools such as Matlab. Thorough knowledge of simulation usages. Applicants must have unrestricted authorization to work in the United States. Salary $75,000/year. 40 hours/wk. Respond with two copies of resume to Case #71852, P.O. Box 8968, Boston, MA 02114.

Software Application Developer - Work as a member of a team to analyze user requirements, identify problems & specific input & output requirements. Write detailed description of user needs & write code to implement user needs. Review & study computer system capabilities & existing processing system to evaluate effectiveness & develop new system to improve production as user requires. Plan & prepare technical reports. Debug & upgrade to maintain current system after implementation. Min. req. inc.: M.S. in C.S. or C.I.S.; & 2yrs. exp. in above pos. or Prog./Analyst or related w/ ability to use Visual C++; Visual Basic; MS SQL Server; ODBC; Internet Web Page; Microsoft Windows Operating System Fundamental; Microsoft Windows Network & TCP/IP Protocol; client-server programming using Visual C++; Visual Basic, SQL Server on the environment of Microsoft Windows NT system. 40.0 hr/wk. $56,000/yr. 8:00-5:00. Applicants send 2 copies of resume to: Georgia Department of Labor, Job order # GA 6220789, 1535 Atkinson Road, Lawrenceville, GA 30243-5601 or the nearest Department of Labor Field Service Office.

Software Eng. MSCS+ 1 yr program exp. C++ & SQL required. Complete project dev. cycle, analysis, design database & program arch, program, customer support: prepare multimedia, digital motion & audio. 40hr/wk. $53,000/yr. Send 2 resumes or apply in person to GA Dept Labor, Job Order #GA 6223438, 2943 N. Druid Hills Rd, Atlanta, GA 30329 or a Labor Dept Field service office.

PROGRAMMER/ANALYST: Various unanticipated locations in US. Design & develop prototype applications of C & Visual C++ object oriented application modules, unit test modules, develop database utility applications, write C++ stored procedures, install relational database & maintain C++ modules. Requires B.S. in Comp Sci or equiv, 2 yr exp in job offered. 40 hr/wk, 9-5, M-F, $56,900/yr. Must have proof of legal auth to work in US. Report in person or send 2 resumes to GA Dept of Labor, JO# GA 6223241, 2943 N Druid Hills Rd, Atlanta, GA 30329 or nearest Dept of Labor Field Service Office.

Senior Program Analyst/ Software Engineer project lead with three years of industry experience to design, develop and implementation software applications using Oracle, Developer 2000, PB, VB, SQL, C++, UNIX. Excellent communications skills required. Master's Degree, or a Bachelor's Degree and 5+ years experience. Fax resume to: Krishna Krovi, RKA: (617)227-3171 or email: kkrovi@raymondkarsan.com

SYSTEMS ANALYST. Analyze computer user requirements, problems and procedures to automate processing or to improve existing computer systems. Must be able to travel. Bachelor of Science in computer science, engineering, or math-related and 2 years experience in job offered required. $53,000/yr. Interested applicants apply by resume to: Georgia Department of Labor, Job Order # GA 6225039, 2943 N. Druid Hills Road, N.E., Atlanta, GA 30329, or the nearest Department of Labor Field Service Office.

Software Engineer. Performs software design and development to create new functionality modules to be implemented in a core routing software system used in conjunction with various network systems routers and remote access router systems by developing a simplified OSPF application porting protocol. Insures compliance and integration with TCP/IP multiple platform stack protocols and develops related Clear TCP and Telenet application porting protocols. Requires Master's degree in Computer Science. No experience necessary. Hours: 8:30 a.m. - 5:00 p.m. 40 hours per week at $59,450.00 per year salary. Please send two (2) copies of resume to: Case #71838, P.O. Box 8968, Boston, MA 02114.

City of Gainesville

GAINESVILLE REGIONAL UTILITIES

Database Administrator (#U310-98)
Salary Range: $37,869 - $56,046

Resp. prof. work designing and managing logical and physical databases, applying knowledge of database design standards and data base mgt. sys. Grad. from an accred. four yr. college or univ. w/major course wk. in computer and information sys., or sys. eng., or math, and four yrs. exp. in information sys. design. May sub. master's deg. w/three yrs. rel. exp. or two yr. deg. in computer science w/six yrs. rel. exp.

Req. a min. of two yrs. exp. creating data dictionaries, stored procedures, triggers and logical/physical table designs for Oracle or MS SQL Server. A min. of one yrs. exp. in application prog, data modeling tools, RDBMS installation, tuning, security profiles, and backup/recovery procedures on NT, DEC VMS, or UNIX operating sys. highly des. Valid DL req.

Apply By: 5/17/98. Send applications to: City of Gainesville, Human Resources Department, P.O. Box 490, Gainesville, FL 32602. For further information call the Jobline: 352-334-2992.

Pursuant to Florida Public Records Law, applications are subject to disclosure. EEO/AA Employer/ADA Accommodations, pref. to eligible veterans and spouses of vets per FL Adm. Code/Drug Free Workplace.

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Email: DalyCoRC@aol.com

SENIOR SOFTWARE ENGINEER: Design and Development of Applications on IBM Mainframe using structured systems analysis and design methodology. Design of logical and physical database models. Preparation of Program Specifications and test plans. Coding and testing of on-line transaction processing programs and batch programs using DB2 and VC COBOL II. Maintenance and on call support of productions systems. Provide technical guidance to offshore team. Coordination with offshore team in addressing users queries and programs to achieve the defined service levels. Salary $67,400 per year, 40 hrs per week 8:30 a.m. - 5:30 p.m. Monday thru Friday. B.S. in Computer Science/Engineering: 3 years experience in the job offered. Job in Jacksonville, Florida : Send this ad and resume to: FDLES Bureau of Operations, 1320 Executive Center Dr., Ste 110, Tallahassee, FL 32399-0667 Re: Job Order number FL-1778628.

SOFTWARE ENGINEER: Design, develop, test, implement and maintain applications for transportation industry. Prepare user requirement specifications for maintenance, enhancement and development functions. Responsible for on-line transaction processing, and development and maintenance of programs using structure techniques in IBM MF environment with COBOL and DB2. Test programs and implement changes in product as required. Salary $61,600.00 per year, 40 hrs per week : 8:00 a.m. - 5:00 p.m. Monday thru Friday. B.S. in Computers/ Engineering or Math field : 2 years experience in the job offered. : Job in Jacksonville, Florida : Send this ad and resume to FDLES Bureau of Operations, 1320 Executive Center Dr., Ste 110, Tallahassee, FL 32399-0667 Re: Job Order number FL-1778622.

Software Developer Responsible for the design, implementation, and maintenance of modeling tools (analysis and design) in multiplatform CASE environment. Define and implement informational models for object oriented tools. Translate analysis models into database applications using computer language. Develop graphical model for modeling and construction tools in multiplatform CASE environment. Duties entail work with development of CASE tools and compilers; development and implementation of graphical interfaces for OS/2 and Windows NT; object oriented design and programming using C++ for Windows NT and OS/2; RDBMS. Requires: Bachelor's in Comp. Science, Math or Engineering. Three yrs. exp. in the job offered or 3 yrs. exp. as a Project Leader, Software Engineer, or Systems Analyst. Experience must involve development of CASE tools and compilers; development and implementation of graphical interfaces for OS/2 and Windows NT; using C++ for Windows NT and OS/2. 40 hr. wk. 8:30 am. - 5:30 pm. Mon.-Fri. $55,550/yr. Overtime N/A. Overtime $N/A. Interested applicants to apply to the nearest Job Service office or submit a resume to: Job Service, 742-F East Chatham St., Cary, NC 27511. All resumes must include the applicant's Social Security number and Job Order number NC5701103 and DOT code 030.062-010.

Oracle Applications Manager. Duties: Manage the system set-up and implementation of Oracle Human Resource Management system using Oracle Database, Designer 2000 and Developer 2000. Create reports and interface system and process gap analysis and data conversion using Reports 2.0 and 2.5, Browser and FastFormula. Analyze and set-up security system with Oracle HRMS using menus, security profiles and forms. Perform costing set-up using tools including: SQL Plus, SQL and Pro+C. Analyze and design payroll systems project. Configure applications for system using Oracle 6.0 and 7.0, PL/SQL, UNIX and Windows 95. Analyze existing system and develop client server to enhance performance. Responsible for training, team leading and supervision of staff. Requires: B.S. or foreign equiv. in Computer or Information Science, Business Information Systems or related field and 2 yrs. exp. in the job offered or 2 yrs. exp. as a Sr. Software Engineer or Software Engineer Manager. Exp., which may have been obtained concurrently, must include: 2 yrs. exp. analyzing and designing payroll system and 2 yrs. exp. in Oracle 6.0 and 7.0, PL/SQL, Pro+C and Windows 95. EOE. 40 hrs./wk.; 8:00 a.m. to 5:00 p.m. Salary: $100,000/yr. Send resume (no calls) to: Carrie Shevlin, Answer-Think Consulting Group, 3200 Windy Hill Rd., Suite 800 West, Atlanta, GA 30339. Must have legal authority to work in U.S.

Research, design, develop, and test C++ class libraries for financial software applications for three tier client-server system communicating with relational databases and mainframe host systems on the back end, and user interface through a World-Wide Web compatible browser using CGI Scripts and HTML on the front end. Utilize object-oriented design methodologies and UNIX platform. Design data models complementing C++ libraries that provide seamless interface to object paradigm. Design GUI. Test for reliability, performance tuning and fault-tolerance. Occasional mgmt. team software developers. 40 hr. wk. M-F 8:30a-5:30p. B.S. Com. Sci., Phys. Sci., or Math. 3 yrs industry C++. $60,000+ commensurate with exp. Send resume to Security First Technologies, Inc. 3390 Peachtree Rd, Ste. 1700, Atlanta, GA 30326-1108. Attn: Ms. Coleman.

Sr. Programmer/Analyst. Atlanta. Plan, develop, and implement business application software. Evaluate user requests for new system to determine feasibility within time and cost constraints. Design object-oriented model to technical specs using C++, Rational Rose. Prepare flowcharts and diagrams. Code modules. Design and implement applications using Roguewave class libraries, Oracle database, distributed programming tool. B.S. Com. Sci., Math or Phys Sci. 2 yr experience. 3 yrs C++ work and/or classroom. $60,000 up. 40 hr wk. M-F 8:30 a - 5:30 p. Send resume to DRACS Consulting Group, 3340 Peachtree Road, Suite 2950, Atlanta, GA 30326. Attn: Brett Coffman.

SYSTEMS ADMINISTRATOR. Various unanticipated locations in U.S. Set up LANs and WANs; analyze & restructure databases; devise & implement UNIX backup & recovery systems; produce & distribute new software releases using C, PASCAL, SQL; use performance analysis for UNIX system tuning. Requires BS degree in Comp Sci or equiv + 2 yr exp in job offered. 40 hr/wk, 9-5, M-F, $69,500/yr. Must have proof of legal auth to work in US. Apply in person or by resume to GA Dept of Labor, J.O. #GA 6220111, 2943 N. Druid Hills Rd, Atlanta, GA 30329-3909 or nearest Dept of Labor Field Service Office.

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Programmer Analyst sought to analyze, design and program customized software that provides functions specific to state government child support on IBM mainframe using TELON, COBOL and IMS. Design and program software to provide computer-based training and multimedia functions using MULTIMEDIA TOOLBOOK. Applicants must have a Bachelors degree or equivalent in computer science or electrical engineering plus two years of experience in the job offered. M-F, 8-5; 40hrs/wk. Salary $37/hr. Submit resume to: FDLES Bureau of Operations, 1320 Executive Center Dr., Ste. 110, Tallahassee, FL 32399-0667. Re: Job ord# FL-1778205.

SYSTEMS ANALYST. Analyzes user requirements, procedures and problems to automate processing or to improve existing computer system. Bachelor of Science degree in Computer Science, Engineering, or Math-related, and 2 yrs. experience in job offered required. Must be able to travel. Two years experience required using Visual Basic, Access or SQL Server. $53,000/yr. Interested applicants apply by resume to: Georgia Department of Labor, Job Order # GA 6223607, 2943 N. Druid Hills Road, N.E., Atlanta, GA 30329, or the nearest Department of Labor Field Service Office.

Software Engineer. Design, develop and implement Client/Server applications and graphical user interface. Demonstrated ability to work with Graphical User Interface using Visual Basic and Power Builder. Demonstrated ability to work with databases such as Oracle, Sybase and MS Access. $60,500/yr. 40 hr/wk. 9 a.m. - 5 p.m. Must have 1 yr exp. and M.S. Comp. Sci., Comp. Applic. rel. field/ equiv. Send 2 resumes: Case #71805, P.O. Box 8968, Boston, MA 02114.

SOFTWARE ENGINEER needed for North Brunswick, NJ Comp Services Co. Must have 1yr exp researching, dsgng, dvlpg RDBMS; using ORACLE, Pro*C & Foxpro in Unix & Win NT; inclg dvlpg internet/intranet using HTML & CGI scripts. Master's needed. Respond to: HR Dept, Vertex Soft Inc, 63 Sassafras Ct, North Brunswick, NJ 08902.

SOFTWARE DEVELOPER. Responsible for HPS product development and maintenance using Windows NT, Microsoft SQL Server, C++ and TCP/IP, specifically, application preparation subsystems (client/server), database runtime subsystems and runtime server debugging subsystems. Requires: Bachelor's in Computer Science, Engineering, or Math. 3 yrs. exp. in the job offered or 3 yrs. exp. as a Software Developer or Systems Analyst. Experience must involve testing and development of client/server applications using HPS tools, Windows NT, C++, SQL Server, TCP/IP. 40 hr wk., 8:30 am - 5:30 pm., Mon.-Fri. $55,550/yr. Overtime N/A. Overtime $N/A. Job located in Cary, NC. All resumes must include applicant's: Social Security #; job order # NC5701098; and DOT code 030.062-010. Apply to nearest Job Service office or submit resume to: Job Service, 742-F East Chatham Street, Cary, NC 27511.

PROGRAMMER/ANALYST needed for Hazlet, NJ IT Co. Must have 1yr exp in job offd or 1yr as Systems Engineer. BS needed in Comp Sci or Math. Respond to: HR Dept, ACE Technologies Inc, 1 Bethany Rd, Bldg 5, Ste 70, Hazlet, NJ 07730.

Principal Hardware Engineer - Perform highly complex full-custom VLSI circuit implementation duties in the design of an advanced microprocessor. Develop and implement solutions to engineering problems using broad range of VLSI design skills including circuit, logic, architectural and full-custom microprocessor design. Project responsibilities for circuit implementation of a portion of an advanced microprocessor from architectural feasibility studies through to production silicon. Provide technical direction and leadership to a small implementation team. Interact with members of microprocessor architecture and VLSI process technology teams. Requirements include a Bachelor of Science Degree or equivalent in Electrical Engineering or Electronic Engineering with five years experience in job offered or as a VLSI Design Engineer. Applicants must have unrestricted authorization to work in the United States. Salary $90,000/year. 40 hours/wk. Respond with two copies of resume to Case #71906, P.O. Box 8968, Boston, MA 02114.

PROJECT ENGINEER

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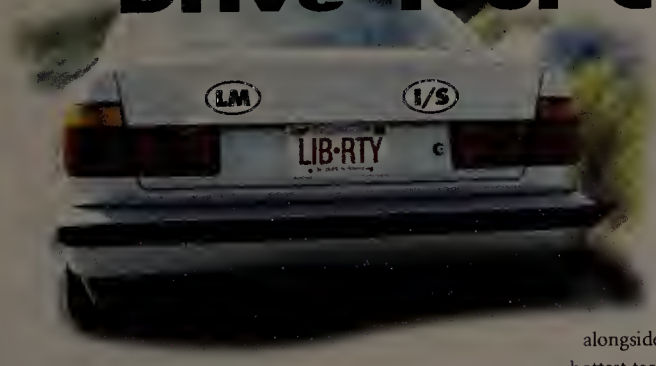

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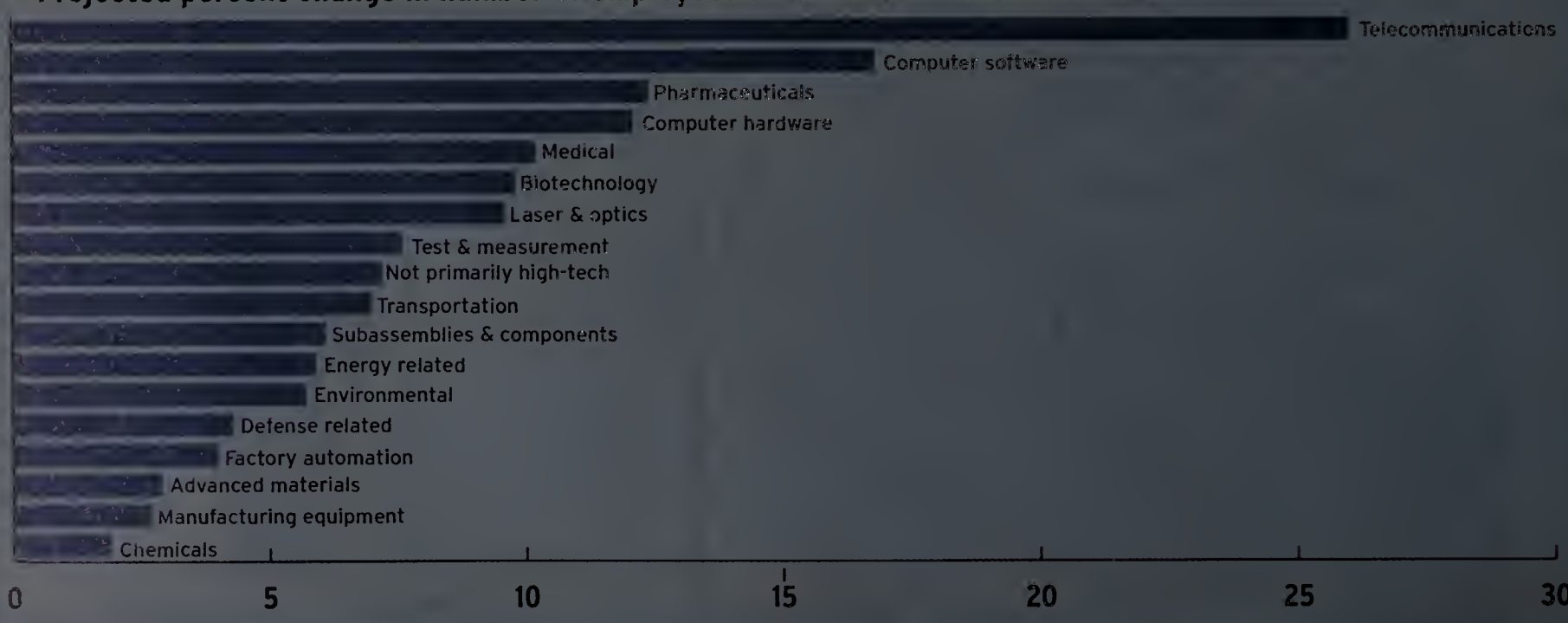

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The Week in Stocks

Gainers

PERCENT

Network Solution Inc	24.1
FORE Systems Inc. (H)	21.0
System Software Assoc.	17.1
Pegasus Systems 15.6	
SCO Inc.	14.8
Lycos Inc.	14.6
Shiva Corp.	13.3
SynOpsys	13.1

DOLLAR

Network Solution Inc	10.63
Amazon.com	9.81
Lycos Inc.	7.94
Dell Computer Corp. (H)	7.75
America On-Line (H)	7.13
Excite, Inc.	5.22
Yahoo! Inc.	5.00
SynOpsys	5.00

Losers

PERCENT

Quarterdeck Corp.	-20.6
NetManage Inc.	-16.8
Andataco Inc.	-15.8
Checkpoint Software Technologies,	-14.9
Data Race Inc. (L)	-14.0
Red Brick Systems Inc.	-12.1
Radius Inc.	-11.3
Micrografx Inc.	-10.6

DOLLAR

Checkpoint Software Technologies	-4.81
Micro Focus	-4.25
Microsoft Corp.	-3.56
Aris Corp.	-3.38
Keane Inc.	-3.00
Cambridge Tech. Partners	-2.56
Electronic Data Systems Corp.	-2.44
Computer Horizons	-2.25

INDUSTRY ALMANAC

Stocks dip but don't dive

Technology stocks dipped last week amid reports that the Federal Reserve Board is again considering a hike in short-term interest rates. Analysts say the jitters were premature.

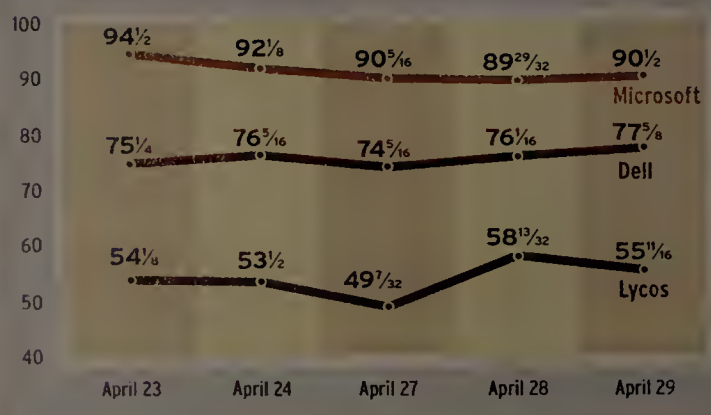
Edward Yardeni, chief economist at Deutsche Morgan Grenfell in New York, says it still isn't clear whether the Fed will take action. And even if the agency does boost interest rates, Yardeni says that increase wouldn't exceed a quarter of a percentage point. "There isn't enough inflation for the Fed to go on the warpath," Yardeni says.

When the rumors hit Wall Street last week, Microsoft Corp.'s (Nasdaq:MSFT) shares fell from 92 5/32 to 90 5/16. Shares in PC maker Dell Computer Corp. (Nasdaq:DELL), fell from 76 5/16 to 74 5/16. And shares in Internet search engine Lycos, Inc. (Nasdaq:LCOS) slid from 53 1/2 to 49 7/32.

"When interest rates go up, people do buy less of all sorts of things, and the market slows down," says Jonathan Cohen, an analyst at Merrill Lynch Global Securities in New York. But technology stocks aren't as sensitive to reduced spending because the rate of return on technology purchases is very high, he says. The market did make a comeback at the end of the week thanks to a Commerce Department report showing steady economic growth and low inflation. But Yardeni says anyone concerned about technology overvaluation sector should go for stocks in technology and the broader market. The real worry for short-term technology investors is the year 2000 problem. He says testing, not new system acquisition, will be the focus of information technology shops in the next 18 months. — Nancy Dillon

FEAR OF THE FED

Technology stocks fell April 27 amid rumors that the Federal Reserve would raise interest rates. But analysts say a sweeping technology downturn because of a rate hike isn't likely



Exch	52-Week			May 1 2PM	Wk Net change	Wk Pct change
Communications and Network Services					**UP 0.4%**	
COMS	59.69	28.25	3 COM Corp.	34.06	0.13	0.4
AIT	50.25	29.88	AMERITECH Corp.	42.81	-1.06	-2.4
ASND	60.00	22.00	Ascend Communications	43.00	1.13	2.7
T	68.50	31.88	AT & T	60.94	-0.69	-1.1
BNYN	13.38	1.19	Banyan Systems Inc.	8.13	-0.44	-5.1
BAY	41.88	16.25	Bay Networks Inc.	24.00	0.88	3.8
BEL	106.00	66.63	Bell Atlantic Corp.	97.19	4.13	4.4
BLS	68.69	42.38	Bellsouth Corp.	64.69	0.50	0.8
BRKT	22.75	9.25	Brooktrout Technology	20.44	0.44	2.2
CS	46.50	12.63	Cabletron Systems	13.25	-0.50	-3.6
CGRM	21.88	8.56	Centigram Communications	13.13	0.25	1.9
CSCO	74.75	33.13	Cisco Systems Inc. (H)	73.63	1.38	1.9
CMNT	6.13	3.31	Computer Network Tech.	4.25	0.13	3.0
CNCX	30.00	7.88	Concentric Network Corp.	22.00	-0.75	-3.3
DIGI	32.75	16.50	DSC Communications	17.72	-0.22	-1.2
FORE	23.75	11.50	FORE Systems Inc. (H)	23.75	4.13	21.0
GDC	9.50	3.25	General Datacomm Inds.	5.00	0.13	2.6
GSX	53.00	36.63	General Signal Networks	43.31	-0.75	-1.7
GTE	64.38	40.50	GTE Corp.	58.63	-0.75	-1.3
LU	79.00	28.81	Lucent Tech.	75.13	1.81	2.5
MADGF	9.19	3.25	Madge Networks NV	6.69	-0.31	-4.5
MCIC	53.00	27.31	MCI Communications Corp.	49.50	-2.06	-4.0
NETM	5.25	2.09	NetManage Inc.	3.25	-0.66	-16.8
NTRX	3.00	0.63	Netrix Corp.	2.38	-0.13	-5.0
NCDI	14.50	5.88	Network Computing Devices	9.25	-0.31	-3.3
NWK	22.38	11.63	Network Equipment Tech.	20.13	1.44	7.7
NN	69.38	18.94	Newbridge Networks Corp.	28.88	1.56	5.7
NT	67.00	35.69	Northern Telecom Ltd.	60.69	-1.13	-1.8
NOVL	11.13	6.28	Novell Inc.	9.94	0.16	1.6
ODSI	16.50	5.19	Optical Data Systems Inc.	8.31	0.56	7.3
PCTL	14.13	5.63	Picturetel Corp.	9.38	-0.25	-2.6
PTON	3.50	0.97	Proteon Inc.	1.06	-0.06	-5.6
RACO	4.13	1.00	Racotek Inc.	3.50	-0.38	-9.7
RADS	29.38	11.25	Radiant Systems Inc	22.38	-0.38	-1.6
VRTL	7.63	3.94	Retix	5.38	0.06	1.2
SBC	46.56	26.75	SBC Communications	41.75	0.69	1.7
SFA	26.13	14.00	Scientific Atlanta Inc.	24.38	1.19	5.1
SHVA	16.44	8.06	Shiva Corp.	11.69	1.38	13.3
FON	75.63	43.63	Sprint Corp.	68.00	-1.25	-1.8
QWST	41.06	13.19	QWest Communications Int	L Inc. 38.31	1.25	3.4
SMSC	18.13	8.00	Standard Microsystems Corp.	10.88	-0.38	-3.3
USW	58.00	34.13	U S West Inc.	52.00	-0.19	-0.4
XIRC	18.00	8.50	Xircom (H)	17.25	0.13	0.7
XYLN	31.31	13.38	Xylan Corp.	29.38	1.00	3.5
PCs and Workstations					**UP 0.6%**	
AAPL	29.63	12.75	Apple Computer Inc.	27.25	-0.63	-2.2
CPQ	39.75	16.69	Compaq Computer Corp.	29.44	0.38	1.3
DELL	83.00	20.56	Dell Computer Corp. (H)	83.00	7.75	10.3
GTW	58.94	19.38	Gateway 2000 Inc. (H)	58.94	1.19	2.1
HWP	75.88	50.13	Hewlett Packard Co. (H)	74.44	2.69	3.7
MUEI	25.38	8.44	Micron International Inc.	14.13	-1.13	-7.4
NIPNY	74.00	48.63	NEC America	55.81	-0.69	-1.2
SGI	30.31	10.94	Silicon Graphics	12.88	-0.56	-4.2
SUNW	53.31	27.88	Sun Microsystems Inc.	41.31	.38	3.4
Large Systems					**OFF -1.0%**	
DGN	37.94	13.38	Data General Corp.	15.19	-0.31	-2.0
DEC	62.63	29.13	Digital Equipment Corp.	56.75	0.25	0.4
IBM	120.00	78.63	IBM	116.31	-0.81	-0.7
MDCD	6.63	3.13	Meridian Data Inc.	5.69	-0.06	-1.1
NCR	38.50	25.63	NCR Corp	37.25	-0.06	-0.2
PRCM	18.63	6.75	ProCom Technology, Inc.	8.25	-0.13	-1.5
SQNT	31.25	14.88	Sequent Computer Sys.	19.69	0.31	1.6
TEXM	6.00	2.50	Texas Micro Inc	3.63	-0.25	-6.5
SRA	60.75	31.00	Stratus Computer Inc.	44.06	-1.25	-2.8
UIS	23.19	5.88	Unisys Corp.	22.63	0.63	2.8
Software					**UP 0.5%**	
ADBE	53.13	33.50	Adobe Systems Inc.	49.81	-0.44	-0.9
AMSWA	15.63	5.63	American Software Inc.	8.06	-0.31	-3.7
APLX	12.50	3.44	Applix Inc.	5.56	-0.13	-2.2
ARSW	53.25	21.00	Arbor Software	45.28	0.78	1.8
ARDT	15.88	6.38	Ardent Software	14.38	1.25	9.5
ARSC	36.38	17.75	Aris Corp.	30.75	-3.38	-9.9
ADSK	51.13	30.50	Autodesk Inc.	46.00	2.00	4.5
BMCS	98.63	41.50	BMC Software Inc.	93.25	1.81	2.0
BOOL	25.69	13.13	Boole and Babbage	23.94	0.50	2.1
BORL	12.19	5.88	Borland Int L Inc.	9.94	0.38	3.9
BOBJY	19.25	6.63	Business Objects (H)	19.25	1.88	10.8
CAYN	4.25	0.94	Cayenne Software Inc.	2.22	0.22	10.9
CNTR	3.31	0.88	Centura Software	2.03	0.03	1.6
CHKPF	50.50	21.00	Checkpoint Software	27.50	-4.81	-14.9
COGNF	35.00	17.63	Cognos Inc.	26.75	-1.25	-4.5
CA	61.00	32.44	Computer Associates	59.25	-0.19	-0.3
CPWR	53.38	18.44	Compuware Corp.	48.25	-0.25	-0.5
CSRE	14.00	4.25	Comshare Inc.	7.44	-0.06	-0.8
COSFF	6.69	1.40	Corel Corp.	2.63	-0.13	-4.5
DWTI	5.38	2.13	Dataware Technologies Inc.	4.25	-0.13	-2.9
FILE	60.25	10.50	Filenet Corp.	55.25	-0.25	-0.5
FRTE	16.88	4.94	Forte Software	6.88	-0.31	-4.3
FTPS	6.38	1.50	FTP Software Inc.	2.91	-0.13	-4.1
GPSI	39.75	20.38	Great Plains Software, Inc	37.25	1.75	4.9
HUMCF	54.25	24.38	Hummingbird Comm. Ltd.	33.63	-0.38	-1.1
HYSW	48.63	14.63	Hyperion Software Corp.	43.75	1.00	2.3
IRIC	20.00	12.50	Information Resources	18.75	0.19	1.0
IFMX	12.44	4.00	Informix Corp.	9.41	-0.03	-0.3
INGR	14.19	6.25	Intergraph Corp.	8.44	0.19	2.3
LEAF	4.00	0.81	Interleaf Inc.	2.69	-0.19	-6.5
ISLI	21.25	7.13	Intersolv Inc.	15.50	0.75	5.1
INTU	54.94	21.88	Intuit Inc.	53.00	2.38	4.7
JDEC	42.50	24.88	J.D. Edwards Co.	37.19	1.31	3.7
TLC	28.75	5.88	Learning Co. (The) (H)	27.19	1.31	5.1
LGWX	16.00	5.00	Logic Works	14.94	0.31	2.1
MAPS	14.25	8.38	MapInfo Corp.	12.75	0.63	5.2
MATH	4.63	2.38	MathSoft	3.94	-0.03	-0.8
MENT	13.13	6.50	Mentor Graphics	10.69	1.13	11.8
MIFGY	60.63	20.75	Micro Focus	42.00	-4.25	-9.2
MGXI	14.00	4.50	Micrografx Inc.	11.63	-1.38	-10.6
MSFT	99.13	57.44	Microsoft Corp.	89.19	-3.56	-3.8
OBJS	5.25	0.44	ObjectShare, Inc.	3.75	0.31	9.1
OMTL	15.00	8.25	Omtool Ltd	12.00	-0.06	-0.5
ORCL	42.13	17.75	Oracle Corp.	25.63	-1.19	-4.4
PMTC	35.25	19.06	Parametric Technology	31.22	-0.53	-1.7
PSFT	57.44	19.50	Peoplesoft	45.25	-1.75	-3.7
PTEC	18.38	11.00	Phoenix Technologies	11.50	-0.13	-1.1
PSQL	25.00	7.38	Platinum Software	21.38	-1.63	-7.1
PLAT	31.13	10.56	Platinum Technology	26.00	0.63	2.5
PRGS	34.63	15.75	Progress Software Corp.	32.00	0.94	3.0
RNBO	30.00	14.25	Rainbow Technologies Inc.	25.06	0.19	0.8
REDB	11.63	5.00	Red Brick Systems Inc.	6.38	-0.88	-12.1
ROSS	5.40	2.00	Ross Systems, Inc (H)	4.44	-0.50	-10.1
SCOC	7.25	3.13	SCO Inc	5.81	0.75	14.8
SDTI	44.38	20.13	Security Dynamics Tech. (L)	23.94	2.19	10.1
SSW	28.88	15.13	Sterling Software Inc.	26.50	1.00	3.9
SDRC	30.00	15.25	Struct. Dynamics Research	27.25	-0.06	-0.2
SYBS	23.63	6.88	Sybase Inc.	8.34	0.06	0.8
SYMC	31.88	13.75	Symantec Corp.	29.06	-0.75	-2.5
SNPS	47.13	28.00	SynOpsys	43.06	5.00	13.1
SSAX	17.63	4.94	System Software Assoc.	8.56	1.25	17.1
SYSF	14.50	3.00	Systemsoft Corp.	3.84	0.03	0.8
BAANF	55.50	26.38	The Baan Co.	45.41	-1.72	-3.6
TRUV	5.19	1.50	Truevision Corp.	2.13	-0.06	-2.9
VSIO	50.50	23.25	Visio Corp.	49.63	1.91	4.0
WALK	20.44	11.50	Walker Interactive Systems	19.00	-0.31	-1.6
WALL	29.13	11.31	Wall Data Inc.	15.13	0.00	0.0
WANG	32.25	16.88	Wang Laboratories Inc.	27.31	-0.13	-0.5
Internet						
AMZN	100.00	15.75	Amazon.com	92.13	9.81	11.9
AOL	82.75	21.94	America On-Line (H)	80.25	7.13	9.7
ATHM	38.38	16.63	At Home Corp.	34.00	0.94	2.8
EDFY	22.13	9.33	Edify Corp.	11.13	-0.38	-3.3
XCIT	93.31	8.13	Excite, Inc.	67.00	5.22	8.4
SEEK	45.00	8.38	Infoseek Corp.	33.56	3.75	12.6
LCOS	79.13	11.19	Lycos Inc.	62.38	7.94	14.6
NSCP	49.50	14.88	Netscape Comm. Corp.	27.75	2.75	11.0
NSOL	58.00	11.75	Network Solution Inc	54.63	10.63	24.1
OMKT	29.13	7.25	Open Market Inc.	19.13	0.75	4.1
PEGS	31.00	12.50	Pegasus Systems	27.75	3.75	15.6
PSIX	15.75	4.25	PSINet	13.50	-0.19	-1.4
QDEK	3.50	1.19	Quarterdeck Corp.	1.56	-0.41	-20.6
SCUR	15.25	5.38	Secure Computing Corp.	11.25	0.19	1.7
SPYG	13.38	4.06	Spyglass Inc.	10.22	-0.53	-4.9
YHOO	129.63	19.94	Yahoo! Inc.	118.00	5.00	4.4
Semiconductors						
AMD	45.75	17.13	Advanced Micro Devices	27.00	-1.94	-6.7
ADI	39.31	23.75	Analog Devices Inc.	38.88	1.19	3.2
CRUS	17.75	9.00	Cirrus Logic	10.44	-0.63	-5.6
CY	18.94	7.38	Cypress Semiconductor Corp.	9.88	-0.19	-1.9
INTC	102.00	67.38	Intel Corp.	82.38	0.75	0.9
LSCC	74.50	39.75	Lattice Semiconductor	46.38	-2.13	-4.4
LSI	46.88	18.63	LSI Logic Corp.	26.88	-1.25	-4.4
MCRL	46.88	19.38	Micrel Semiconductor Inc.	39.63	0.75	1.9
MU	60.06	22.00	Micron Technology	31.00	0.25	0.8
MOT	90.50	52.00	Motorola Inc.	55.69	-0.94	-1.7
NSM	42.88	19.50	National Semiconductor	21.44	-1.06	-4.7
RMBS	36.75	26.88	Rambus Inc	44.25	2.19	5.2
TXN	71.25	39.63	Texas Instruments	63.88	1.38	2.2
VLSI	36.69	17.06	VLSI Technology	20.81	0.94	4.7
XLNX	58.50	28.50	Xilinx	45.75	-0.81	-1.7
Peripherals and Subsystems						
ADPT	54.25	19.06	Adaptec Inc.	20.38	-2.06	-9.2
APCC	34.38	17.13	American Power Conversion	31.88	-0.63	-1.9
ANDA	2.81	0.94	Andataco Inc.	2.00	-0.38	-15.8
CREAF	29.38	13.13	Creative Technology Ltd.	19.50	-1.25	-6.0
RACE	16.75	1.34	Data Race Inc. (L)	1.34	-0.22	-14.0
DTM	13.13	7.88	Dataram Corp.	11.94	0.00	0.0
EMC	46.75	17.81	EMC Corp. (H)	45.69	2.69	6.3
EMLX	21.25	7.50	Emulex Corp. (L)	8.75	0.88	11.1
ESCC	35.88	22.75	Evans and Sutherland	28.63	-0.25	-0.9
EXBT	16.50	5.63	Exabyte	11.69	0.19	1.6
IISLF	1.88	0.69	Intelligent Info. Systems	1.13	0.03	2.9
IOM	16.75	6.31	Iomega Corp.	7.69	-0.88	-10.2
KMAC	35.38	11.75	Komag Inc.	15.38	0.06	0.4
MTSI	34.88	13.00	Micro Touch Systems Inc.	18.88	-1.31	-6.5
MTIC	17.88	4.06	MTI Technology Corp.	15.75	0.75	5.0
AQM	23.06	2.25	QMS Inc.	4.56	-0.06	-1.4
QNTM	43.25	17.75	Quantum Corp.	23.50	-1.19	-4.8
RDUS	8.13	1.88	Radius Inc.	3.94	-0.50	-11.3
SEG	54.25	17.75	Seagate Technology	27.06	-0.50	-1.8
SOS	14.38	5.00	Storage Computer Corp.	5.94	-0.31	-5.0
STK	86.25	34.25	Storage Technology	83.44	0.69	0.8
TEK	48.19	35.56	Tektronix Inc.	42.81	0.88	2.1
WDC	54.75	14.50	Western Digital Corp.	19.75	-1.44	-6.8
XRX	114.38	59.88	Xerox Corp.	112.75	2.31	2.1
Services						
AMSY	30.00	17.63	American Mgmt. Systems	28.88	0.63	2.2
ANLY	36.50	18.38	Analysts Int L	29.13	0.25	0.9
AUD	70.69	26.56	Auto Data Processing	66.06	-0.06	-0.1
CATP	57.50	23.75	Cambridge Tech. Partners	51.50	-2.56	-4.7
CEN	58.88	32.13	Ceridian Corp.	56.19	-1.38	-2.4
CDO	46.56	20.38	Comdisco Inc.	43.88	0.69	1.6
CPU	38.00	17.19	CompUSA Inc.	18.25	0.06	0.3
CHRZ	53.50	25.75	Computer Horizons	38.00	-2.25	-5.6
CSC	56.75	30.00	Computer Sciences	53.31	1.19	2.3
TSK	49.38	21.00	Computer Task Group	38.50	0.31	0.8
EGGS	12.75	3.75	Egghead Discount Software	9.94	0.06	0.6
EDS	50.88	29.56	Electronic Data Systems Corp.	38.44	-2.44	-6.0
ICO	39.63	20.50	Inacom Corp.	36.00	1.94	5.7
INEL	7.53	2.38	Intelligent Electronics	7.47	0.00	0.0
KEA	59.44	22.81	Keane Inc.	50.50	-3.00	-5.6
MICA	29.75	10.06	Microage Inc.	16.00	1.13	7.6
PAYX	59.75	29.13	Paychex	54.81	0.78	1.4
PMS	81.94	43.00	Policy Management Sys. (H)	81.94	4.75	6.2
REY	24.00	13.75	Reynolds and Reynolds	22.63	-0.38	-1.6
SAPE	57.88	17.25	Sapient Corp.	48.50	1.75	3.7
SCBI	14.75	5.88	SCB Computer Tech. Inc.	12.25	-0.25	-2.0
SEIC	76.00	20.50	SEI Corp.	73.75	-1.25	-1.7
SMS	82.69	41.13	Shareo Medical Systems	71.50	0.63	0.9
SSPE	24.25	10.00	Software Spectrum Inc.	17.50	-0.50	-2.8
SDS	40.00	20.75	Sungard Data Systems	35.50	-0.94	-2.6
VST	17.25	7.25	VanStar Corp.	13.31	0.81	6.5

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

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FTC probe

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observers said breaking up Intel would let users choose once more from a wide variety of platforms.

Others argued that a single desktop standard has simplified issues for users and the computer industry.

It isn't surprising that Intel, with revenue of $25.1 billion last year and an estimated 90% share of the worldwide microprocessor market, has earned the wrath of some competitors and the scrutiny of the U.S. Federal Trade Commission (FTC).

TWO CASES WEIGHED

The commission is said to be considering two antitrust cases against the chip giant, according to published reports. The first suit would allege that Intel unfairly withholds information about its products from companies during disputes.

The other, a broader case that could be filed later, would charge that Intel requires companies that license its microprocessors to purchase additional parts such as memory controllers for the motherboard and other chips.

A federal judge in an Alabama federal court last month ruled that Intel abused its monopoly power by keeping chip information from its customer Intergraph Corp. to prevent the company from competing with Intel's graphics chips.

The court ordered Intel to ship early production chips and provide advanced product information to Intergraph.

Intel has said it will appeal the ruling.

Separately, Digital Equipment Corp. last year accused Intel of denying access to chip specifications while the companies were embroiled in legal disputes, analysts noted.

Those charges were resolved through a settlement between the companies in which Digital agreed to sell its semiconductor assets to Intel for $700 million.

The FTC wouldn't comment on any investigation. Intel spokesman Chuck Mulloy said the company is cooperating with the FTC to "convince them that we have achieved our success legally.

"When a company has been as successful as Intel has been with microprocessors for PCs, they have a right to look into what we do," Mulloy said.

Before filing a suit, the FTC would first have to show that Intel is a monopoly, which isn't as simple as showing that it has 90% market share, said veteran litigator Joe Sims at the Washington law firm of Jones, Day, Reavis, Pogue.

The legal definition of monopoly requires the FTC to show that Intel could raise its prices without decreasing its market share, or that cutting its supply of chips to the market would have the effect of raising the market price for its products, Sims said.

If an antitrust case does push forward, George Cumming, a San Francisco-based antitrust litigator who also worked at the Department of Justice on several big telecommunications company mergers, said government lawyers and federal judges wouldn't have a clue how to go about dismantling the Wintel franchise because they have no prior experience with anything similar to it.

> **"You have two companies that have control of the single most essential piece of hardware and the single most essential piece of software." – attorney George Cumming**

Wintel presents an entirely different kind of animal to dismantle from AT&T Corp. and IBM.

"You have two companies that have control of the single most essential piece of hardware and the single most essential piece of software. That doesn't happen in many industries very often," Cumming said.

"I think [any case against Intel] is political," said Jay Cavalcanto, hardware services owner at PECO Energy Co. in Philadelphia. "It's red tape and rhetoric. There's been so many suits out there lately, it's just routine now." Cavalcanto said the Intel matter will likely fade. And he added that he won't worry about future implications "until something big happens."

But Allan Ditchfield, chief information officer at Progressive Insurance Co. in Mayfield Village, Ohio, argued that competition is stifled by both Intel and Microsoft, with both attempting to control the market.

"The same arrogance that catches people like Microsoft will catch Intel," he said. "I think Intel will have to answer questions." □

IDG News Service reporter James Niccolai contributed to this report.

Some states pull back

The 12-state task force actively investigating Microsoft is a subset of the 27 states that filed a brief in February to support the Justice Department's suit against the software maker.

Since the "friend of the court" brief was submitted to a federal court, some states have pulled back on the case. They haven't changed their minds about the need to study Microsoft's business methods for possible wrongdoing, but they aren't actively pursuing the vendor, either.

Montana, for example, has stopped "active" participation in the probe and, for now, won't co-file a suit, a spokesman for the state said.

"We don't have enough resources to devote up front to assessing [Microsoft's] impact on Montana's consumers. We want to see how [legal action by other states] goes," he said.

Utah, another signer of the February brief and home to Microsoft competitor Novell, Inc., isn't part of the active dozen, either, a Utah spokesman said. Republican Sen. Orrin Hatch, however, has been leading a congressional charge against Microsoft. Hatch has accused Microsoft CEO Bill Gates of building a "proprietary Internet."

But Utah is closely tracking the investigation by the other states, he said.

States can sign on to a suit anytime after it is filed. — Kim S. Nash

Microsoft faces suit

CONTINUED FROM PAGE 1

Microsoft and various state and federal governments comes at time when the vendor's closest partner, Intel Corp., is itself said to be facing antitrust charges (see story at left).

The dual assault on the so-called Wintel duopoly could, in the long-term, change the way the two companies do business, observers said. "Lines are being drawn about what is appropriate behavior in this industry when you're a [dominant] company," said desktop software pioneer Dan Bricklin. "If you're winning a lot, you're not supposed to spike the ball," he said.

Microsoft and Intel, he said, must figure out how to change, yet still retain the power and profits they now have.

PLEADING FOR MICROSOFT

Twenty-six Microsoft partners, including Intel, Compaq Computer Corp. and Dell Computer Corp., last week tried to persuade the Department of Justice that interfering with Microsoft's business would harm the whole industry. Legal moves that could delay Windows 98 "would drag down the entire industry's efforts to deliver value to customers and returns to shareholders," their letter said.

There are several groups lobbying the various parties targeting Microsoft to stop short of government intervention.

As Microsoft's battle with the Justice Department wears on, Richard Blumenthal, Connecticut's attorney general, said a decision about a lawsuit against the vendor by the states "is imminent."

QUICK ACTION

"There are advantages to taking action before mid-May," said Blumenthal, alluding to May 15, when Microsoft is due to ship Windows 98 to PC makers.

The states reportedly want a judge to order Microsoft to separate Internet Explorer from Windows 98. That could delay PC makers from getting the software, which in turn could postpone a general release slated for June 25.

Several other state lawyers confirmed an "intense" investigation of Microsoft but declined to say whether it would result in a lawsuit. "Just because we investigate something doesn't mean the target is guilty. We don't comment for that reason," said Ellen Cooper, chief of Maryland's antitrust division.

"We would hope they would tell us their specific concerns before they proceed with the lawsuit so we could respond," a Microsoft spokeswoman said.

The states asked Microsoft in January and February for marketing and product plans and other documents but haven't told the vendor their precise concerns, the Microsoft spokeswoman said.

Blumenthal disputed that. "We have met face-to-face with the company's chief legal representatives, and they are aware of our concerns," he said.

It isn't clear whether most corporate users will care about another delay in Windows 98.

NO BIG DEAL

A recent Comdex demonstration of the operating system, which many consider to be a minor update to Windows 95, didn't excite users already looking instead at an eventual migration to Windows NT.

Few business users are pining for Windows 98. "No one's even talking about it," said Ralph Cottenham, a software engineer at a certified Microsoft Solutions Provider in Michigan.

A delay would "probably just cause organizations to consider alternatives more seriously," said Dan Kusnetzky, an analyst at International Data Corp. in Framingham, Mass.

Network computers, for example, may seem more attractive, he said.

Although the states have requested documents from Microsoft that are similar to those sought by the Justice Department, state attorneys general don't have as broad authority as the federal government.

For example, unlike the Justice Department, the states wouldn't file a suit seeking to split Microsoft into smaller companies, said Rich Gray, an antitrust lawyer at Bergeson, Eliopoulos, Grady and Gray LLP in San Jose, Calif. □

WHAT MICROSOFT FACES

A group of 12 states alleging antitrust violations. The states reportedly will try to stop Microsoft from shipping Windows 98 to PC makers this month with the Internet Explorer browser integrated into the operating system.

The Justice Department: In addition to last year's Windows 95 lawsuit, another broader suit is rumored to be in the works to tackle Microsoft's business practices in several product and service areas.

Overseas actions: A European Commission investigation of Microsoft's deals with Internet service providers spurred Microsoft in March to loosen contracts and let Internet providers promote browsers from other companies. The Japanese Fair Trade Commission is investigating Microsoft's bundling operation after a search of Microsoft's Tokyo offices in January.

Managed partnerships ensure better customer service

By Julia King

ALL CEO John Greenwell had to do was take a close look at the numbers to see that outsourcing customer service wasn't working.

Compared with its Canadian sister company, Premium Cigars International Ltd. in Scottsdale, Ariz., was lagging behind in new orders for its line of 60 imported cigars. Reorders from Premium's existing retail customers — primarily convenience stores that sell the cigars through a humidor program — also were down. So Greenwell decided to invest in a new computer system, hire staff and bring customer ordering and service operations in-house. That is the approach employed by the Canadian company.

Looking back on it, the problems weren't so much with the outsourcing services provider as they were with Premium's management of the outsourcing relationship, Greenwell said.

"We just didn't give it the attention we should have," he said. "In order to effectively manage an outsourced function, you have to be very aggressive in giving them information and ensuring that certain standards are met. You just can't turn it over and forget it," he said.

Premium, he said, "really didn't provide the necessary hands-on management and direction." Now, Premium is giving extensive product training to its employees, who took over the customer service function a little more than a month ago.

"What we've done is establish a customer service department that addresses problems and sales," which Premium is banking will work to boost overall sales, Greenwell said.

With the in-house system, "if one particular brand is not selling, we can look at our database and examine why. We can also see what's selling at surrounding stores and counsel [our customers] about that," he said.

"[Internal] customer service employees have more of a stake in the product. This is their company. They walk in the door and sit at their desks, which are next to our sales department. They have joint meetings, and the functions are much more integrated than before," Greenwell said. □

Outsourcing service offers flexibility

CONTINUED FROM PAGE 1

off to outsourcers.

One of the biggest reasons companies are outsourcing customer service is that by doing so, they gain access to state-of-the-art customer service technologies without having to underwrite the systems.

The advantages such systems offer include the flexibility to easily change service and support offerings for different marketing campaigns or to quickly funnel customer service data to other departments, such as marketing or engineering.

Users said those advantages, plus the ability to more easily increase staff during special promotions or other events, outweigh the risk of using outsiders, who have less of a financial and cultural connection to a company than a regular employee might have.

Because of the payoffs, such as increased flexibility, sales of outsourced customer services will increase by 40% this year, according to Colleen Amuso, an analyst at Gartner Group, Inc. in Stamford, Conn. The Outsourcing Institute in New York pegs the total 1998 customer service outsourcing market at $7 billion.

Much of that upswing in new business is from high-profile, brand-conscious companies that previously wouldn't dream of putting their most prized asset — customers — in the hands of a middleman.

"Nobody believed we'd outsource something that directly touches our customers," said Andy Cvitanov, senior vice president of external affairs at American Express Co. in New York. The company feared that customers would jump ship if they knew they were dealing with anyone other than an Amex employee.

GUARDING THE BRAND

"We believe our brand is one of the 10 most recognized in the world, so it's very important for us . . . that the fact that you've contracted with other people needs to be blind to the customer," Cvitanov said.

Yet by outsourcing payment processing, billing inquiries and telemarketing, the financial services giant has cut costs by 25% and, according to Amex's monthly customer surveys, significantly boosted service quality. Amex also received access to state-of-the-art technology it didn't have in-house.

Specifically, the company bought access to computer-integrated telephone calling centers staffed by trained customer service representatives.

ERIC COLQUHOUN

The same is true for Hallmark Cards, Inc. in Kansas City, Mo., where executives have Internet access to customer service data that is updated every 15 minutes by its outsourcing partner, Cincinnati-based Matrixx Marketing, Inc.

Matrixx's CyberResponse system continuously formats and posts customer service data, which its corporate customers then access from private, dedicated World Wide Web sites. Matrixx this year plans to invest about $25 million in customer service system enhancements, including additional Web-based reporting capabilities. The figure far exceeds many of its customers' total information technology budgets.

The payoff for Hallmark is that it can quickly gauge the performance of a particular marketing campaign or know how customers are responding to its television specials.

Also key, "Hallmark has a tradition of a very open company. Customers are listened to throughout the corporation," said Sonie Wines, manager of consumer affairs.

The contract with Matrixx lets the greeting-card company maintain that open relationship, she said.

But to be successful, experts warned, companies can't simply toss customer service over the wall to an outsourcer with a bigger and better computer system. Contracts must contain very specific service-level agreements, including financial penalties and rewards for substandard and over-the-top performance (see chart).

Making staffers from service providers feel like a part of your own company also goes a long way toward getting better service for your customers.

Scott Callender, senior manager of operations at Taco Bell in Irvine, Calif., said the company's relationship with its customer service outsourcing firm, Precision Response Corp. (PRC) in Miami, works because PRC's workers are treated like employees of Taco Bell.

LITTLE THINGS MEAN A LOT

When the customer service representatives are brought onto the account, they spend several days in a Taco Bell restaurant so they can better understand the customers. "We send [the PRC] representative gifts from time to time and have days where we bring in Taco Bell food for everyone," Callender said. He said those small gestures make the customer service representative from PRC feel like "an extension of us."

As a result, PRC employees are more likely to exude the corporate image Taco Bell is trying to portray, Callender said.

Anything that touches the customer is critical to a company's performance, so companies must "create relationships based on well-understood metrics," said Harry Wallaesa, the former chief information officer at Campbell Soup Co. in Camden, N.J., and now president of Aligne, Inc., an outsourcing consulting company in Wayne, Pa.

For example, the Customer Outsourcing Performance Center has created a 32-element standard called COPC 2000 for measuring service providers' performance against various set service levels.

In the absence of any one of these elements, the chances of failure increase considerably (see related story above). □

How to manage a customer service outsourcing relationship

- Appoint one person to handle all communications with the outsourcer
- Clearly delineate service levels up front
- Monitor performance and payment against the same service levels

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The Back Page

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Dispatches & images from the fringes of the electronic frontier

Digital archives

20 YEARS AGO
(MAY 1978)

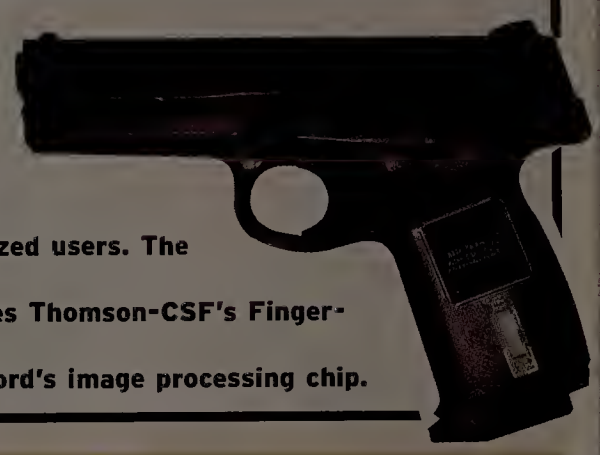
- **Intel** begins producing the **8086 microprocessor**, which was created by two engineers in just three weeks.

10 YEARS AGO
(MAY 1988)

- IBM, Digital, HP and other vendors form the **Open Software Foundation** to challenge the AT&T/Sun alliance to develop a **standard version of Unix.**
- **WordPerfect** ships **WordPerfect 5.0** for $500.
- AT&T files **Tariff 15**, which lets it offer **customer-specific discounts** to compete with other long-distance carriers.

SMART GUN KNOWS ITS OWNER

Oxford Micro Devices in Shelton, Conn., says it can make a safer gun and prevent accidental shootings by children. Oxford's electronics module, which fits in the gun handle, captures a user's fingerprint image and lets the gun fire only if the print matches the stored images of the gun's authorized users. The prototype uses Thomson-CSF's Finger-Chip and Oxford's image processing chip.



A spelling popularity contest

The Web is a repository of billions of words – many of them misspelled. Find out the relative popularity of various spellings – judgement or judgment? – at SpellWeb (*www.spellweb.com*). Submit alternate word choices – theater or theatre? – and discover which one shows up most frequently on the Web.

Yeah, but can they press Ctrl-Alt-Del?

HOWARD NUERNBERGER/PENN STATE UNIVERSITY

Researchers say pigs love to play simple computer games, but first they need an ultrasturdy joystick

As every "Babe"-watcher knows, pigs are smarter than they look. In fact, researchers at Penn State University's College of Agricultural Sciences say pigs can be taught to move a joystick with their snout, manipulate on-screen symbols and solve a maze. That may sound frivolous, but the researchers hope to get pigs to recognize symbols that represent words and then string those words together to communicate their thoughts to humans. Maybe then we'll find out what pigs really think, like: "This slop tastes awful."

Inside Lines

Ready, SET, ...

If it sticks to its current schedule, BankAmerica could become the first bank to offer its member merchants Internet-based credit-card payment services using the Secure Electronic Transaction (SET) protocol. San Francisco-based BankAmerica, which already provides merchants similar services using Cybercash's electronic-commerce software, plans to provide SET services to those clients by June.

Calendar-challenged

Oracle may have its year 2000 issues solved, but it needs to work on its days of the week. A press announcement sent out last week says Oracle will announce on Monday, May 1 a new warehouse tool kit for PeopleSoft's applications package. Monday would be May 4. Maybe that explains Oracle's troubles getting products out on promised dates.

CA on the prowl

With its unsuccessful bid to take over Computer Sciences Corp. closed and filed away, Computer Associates International is lining up smaller acquisition targets — and finding some volunteers, said Charles Wang, chairman and CEO of CA. "They think we have $10 billion burning a hole in our pocket," Wang said. CA officials wouldn't name any nominees. But unwilling candidates may be girding for battle with the company. Wang Global, a $3 billion network and desktop services firm in Billerica, Mass., on Friday adopted a Shareholders Rights Plan to blunt takeover attempts.

Take a break – right now!

This week at the Silicon Valley Ergonomics Conference, officials from Para Technologies will discuss a package called Stretch Break, which interrupts users' work at scheduled times and illustrates proper stretches. The goal of the software from the Costa Mesa, Calif., company is to prevent computer users' repetitive stress injuries. An evaluation version of Stretch Break is available at *www.paratec.com*.

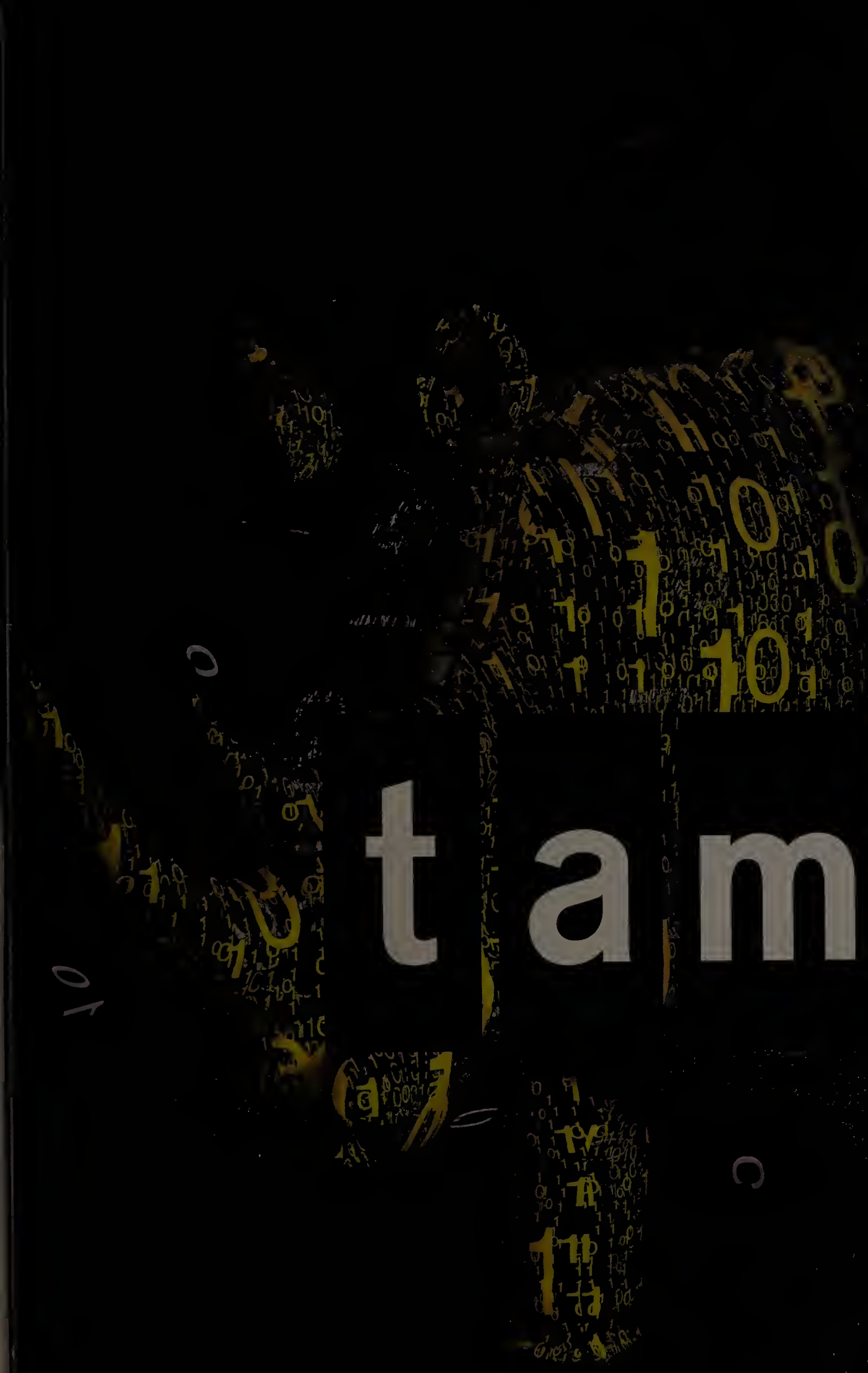
Pick-up lines

In spring, a young man's fancy turns to ... the high-tech labor shortage? Picture this scene in New Orleans on the eve of the annual CA-World '98 conference: CA employees on the balcony of The Cat's Meow party bar overlooking the happy throng on Bourbon Street. A crowd of happy tourists primed with three-for-one cocktails. Two young men from Electronic Data Systems meet two young women from Andersen Consulting. First words from one EDS guy: "Would you like to work for us? I was told to recruit while I'm down here."

Block that metaphor

His name is Skip Patterson, he's Bell Atlantic Corp.'s year 2000 director, and he has done some thinking about the millennium bug. "Neatness doesn't count in [year 2000]," Patterson said. "This may not be too pretty, but it can't be too ugly either. My attitude is we've got this pig, and we've got the perfume out, but it's not going to be pretty like the Taj Mahal. Now, if that doesn't mix enough metaphors, I don't know what does."

There's the World Wide Web. And there are applications. Now come "weblications," a Web-based application term used by more than one speaker at last week's IT Forum show in San Francisco. If you liked that one, how about "infratects" — you know, infrastructure architects, the folks who design IS infrastructures. That was a new one to us. If you have news to share, get in touch with News Editor Patricia Keefe at (508) 820-8183 or patricia_keefe@cw.com



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When business wants to unite the Web and the enterprise...

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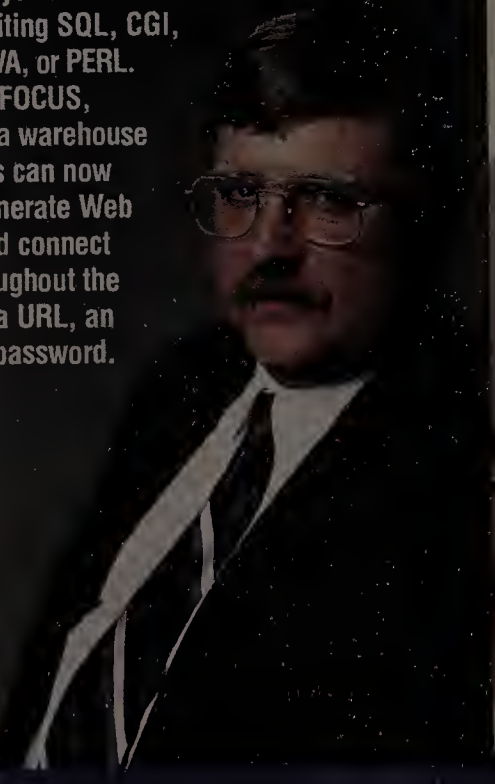
"We found WebFOCUS to be a fast, cost-effective solution for deploying our data warehouse on the Web."

Gary Fisher, Manager Strategic Systems, Sony Electronics Inc.

Sony Electronics Inc. decided to build a data warehouse to help manage and control its inventory. To make the information easily available to users in over 20 states throughout the U.S., the company wanted to build Web front ends for reporting and analysis. The company needed software that had report writing features, supported drill down, graphics and complex, multi-pass database queries. Sony looked at a variety of Web-based tools ranging from the very complex and expensive to the simplistic and inexpensive. The company installed WebFOCUS and had reports on their Intranet in days and drill down reporting systems in weeks without writing SQL, CGI, HTML, JAVA, or PERL. Using WebFOCUS, Sony's data warehouse developers can now quickly generate Web reports and connect users throughout the U.S. with a URL, an ID, and a password.



"In less than two months, we reduced order status calls by 40%, enhanced customer relations, and stimulated new business by driving customers to our Web site."

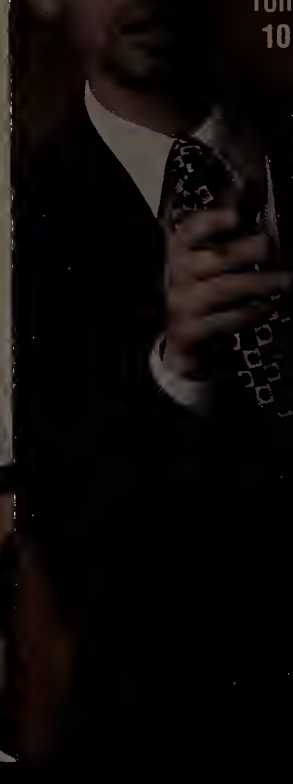
Dan Bond, Data Warehouse Manager, Paradyne Corporation

Using Information Builders EDA middleware and WebFOCUS reporting engine, Paradyne built a Web-based order status system that allows customers to launch dynamic queries against live mainframe data. The whole system was built in 90 days. And in less than two months Paradyne reduced order status phone calls by over 40%.

"With our new Intranet-based decision support system we are able to roll up budget projections in less than 10 minutes."

Kevin Rasmussen, Expert Application Coordinator, Gulf Canada

In the oil and gas business, proactive monitoring of production and costs versus operating budgets is a mission-critical function. That's why Gulf decided it needed a faster way to collect and analyze this information from its field locations around the world. The solution... a Web-enabled data entry and reporting system using Information Builders' Cactus and WebFOCUS. The application, which required almost no training, lets each location update Gulf's databases right over the corporate intranet. Analysts can now roll up the data in less than 10 minutes, create reports from their Web browsers, and evaluate the impact of regional decisions on the big picture.



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